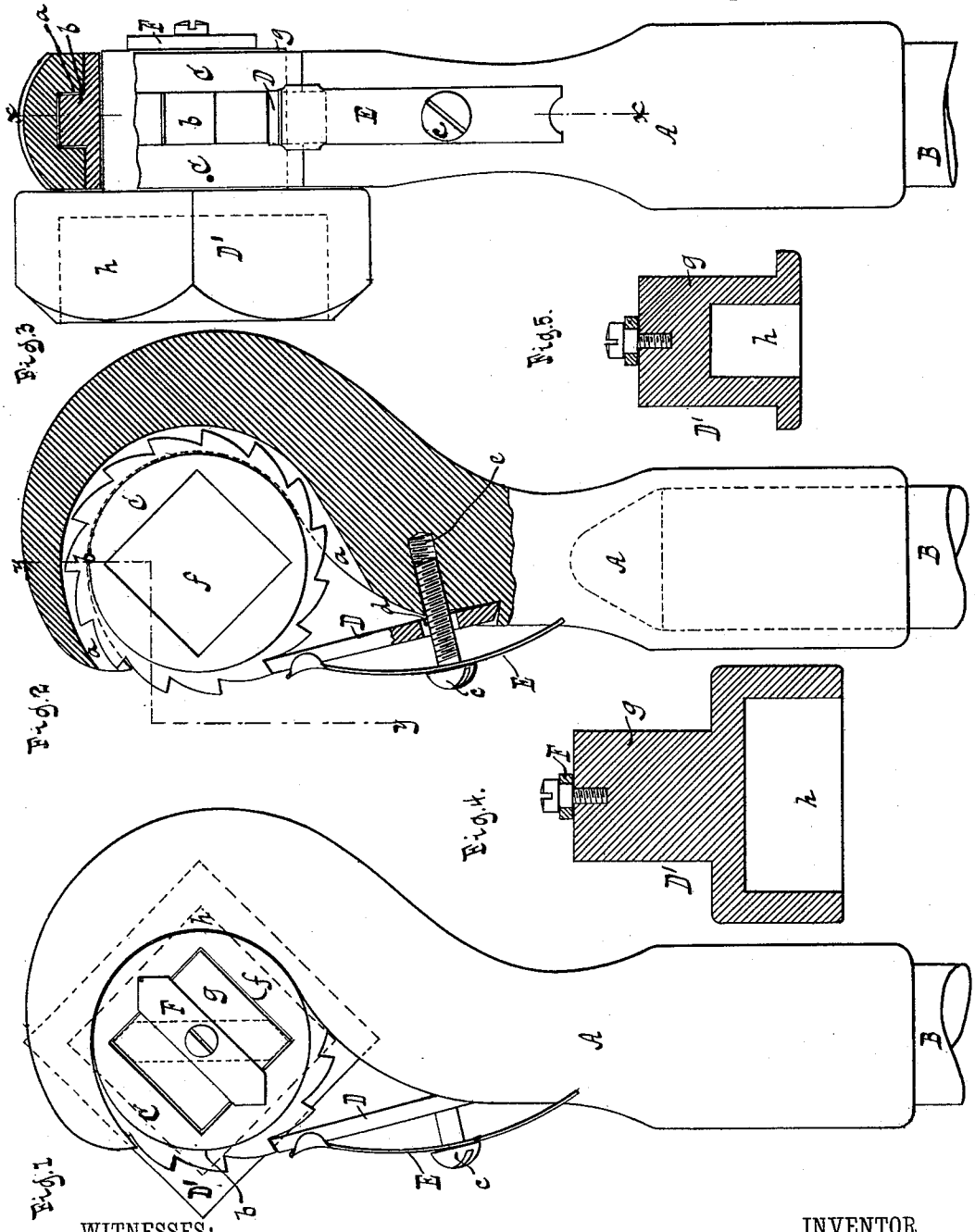
(No Model.)

# L. KRAMER & A. EICKHOFF.

## RATCHET WRENCH.

No. 326,876. Patented Sept. 22, 1885.

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# UNITED STATES PATENT OFFICE.

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## RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 326,876, dated September 22, 1885.

Application filed June 18, 1885. (No model.)

*To all whom it may concern:*

Be it known that we, LUDWIG KRAMER and AUGUST EICKHOFF, both citizens of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Ratchet-Wrenches, of which the following is a specification.

The object of this invention is to produce a ratchet-wrench which can be used for bolt-heads or nuts of different sizes, and which is capable of turning a bolt or nut in or out when the space is limited without removing it from the bolt-head or the nut; and the invention consists in the combination of certain devices, as pointed out in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 represents a side view. Fig. 2 is a section in the line *x x*, Fig. 3. Fig. 3 is a section in the line *y y*, Fig. 2. Figs. 4 and 5 show sections of removable sockets.

Similar letters indicate corresponding parts.

In these drawings, the letter A designates the stock of our ratchet-wrench, which is made of cast-iron or any other material suitable for the the purpose, and which is provided with a handle, B.

The head of the stock is hook-shaped, and in the inner surface of this hook is formed a semicircular groove, *a*, to receive a toothed rim, *b*, formed on the ratchet-wheel C, the the teeth of which are engaged by a pawl, D, the latter being subjected to the action of a spring-plate, E, secured at one end to the stock and bearing with its other end against the upper end of the pawl. The spring and pawl are removably held in position, and the pressure of the spring on the pawl can be regulated by means of a screw, *c*, the head of which bears on the plate, while its shank passes through the same and an aperture, *d*, Fig. 2, in the pawl, its threaded portion being received by suitable internal threads in the stock. This spring-pawl serves for the purpose of imparting a rotary motion to the ratchet-wheel C when the handle is properly turned, and also to retain the same in the semicircular groove in the head of the stock. The ratchet-wheel is provided with a transverse central hole, *f*, which is preferably square in cross-section, this hole *f* being intended to receive the post *g* of a socket, D', Figs. 4 and 5, which is provided with a hole or recess, *h*, constructed to fit the heads or nut of the bolt. A separate socket is made for each size of nut or bolt, ranging from the smallest upward; but each of these sockets is provided with a post of such dimensions that it can be fitted into the ratchet-wheel.

To retain the socket in position, we use a button, F, Figs. 1 and 3, secured to the post and capable of being rotated, which, when extending diagonally across the square post, allows, as shown in dotted lines in Fig. 1, the introduction of the same into the ratchet-wheel, whence the button can be turned so as to extend over the body of the ratchet-wheel, as shown by the full lines in Fig. 1.

From the construction of our device, as shown and described, it will be readily seen that it can be used as an ordinary wrench when the space allows a complete turn of the handle, as the pawl then remains in contact with one tooth of the ratchet-wheel; but when the space is limited and a complete sweep of the handle cannot be obtained our wrench has this great advantage, that it is not necessary to remove the wrench from the bolt-head or nut, as with the ordinary wrench, since the spring-pawl allows a motion of the handle in one direction, which does not effect a turning of the ratchet-wheel.

The convenience of the interchangeable sockets adapted for the different sizes of bolts will be readily recognized without any further explanation.

The socket shown in Fig. 5 is more especially adapted for a nut or bolt-head which is smaller than the hole in the ratchet-wheel. The hole or socket in the ratchet-wheel can likewise be used for the purpose of screwing up or unscrewing bolt-heads which correspond to its dimensions, or wheels can be made with sockets of different sizes which will fit in one and the same stock.

We are aware that a ratchet-wrench has heretofore been composed of a stock having at one end a hook, a die having a journal centrally between its ends to fit the hooked end of the stock, said die having at each end of the journal an annular series of ratchet-teeth,

and a spring-impelled double-pawl pivoted to the stock and engaging the ratchet-teeth. Such construction, however, does not constitute our invention.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the hook-shaped stock and the semicircular groove in the hook-shaped portion of the stock, of a ratchet-wheel fitting in the stock and engaging the semicircular groove and a spring-pawl removably secured to the stock and serving to retain the ratchet in the semicircular groove and to impart to the said ratchet a rotary motion, substantially as described.

2. The combination, with the hook-shaped stock and the semicircular groove in the hook-shaped portion of the stock, of a ratchet-wheel, a toothed rim formed on said ratchet-wheel to engage with the semicircular groove in the stock, a spring-pawl secured to the stock and serving to retain the ratchet in the semicircular groove and to impart a rotary motion to the ratchet, a removable socket fitted into the ratchet, and means for retaining the socket in position, substantially as described.

In testimony whereof we have hereunto set our hands and seal in the presence of two subscribing witnesses.

LUDWIG KRAMER. [L. S.]
AUGUST EICKHOFF. [L. S.]

Witnesses:
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