No. 791,298. PATENTED MAY 30, 1905.

C. H. SMITH.

WRENCH.

APPLICATION FILED SEPT. 17, 1904.

Fig. 2.

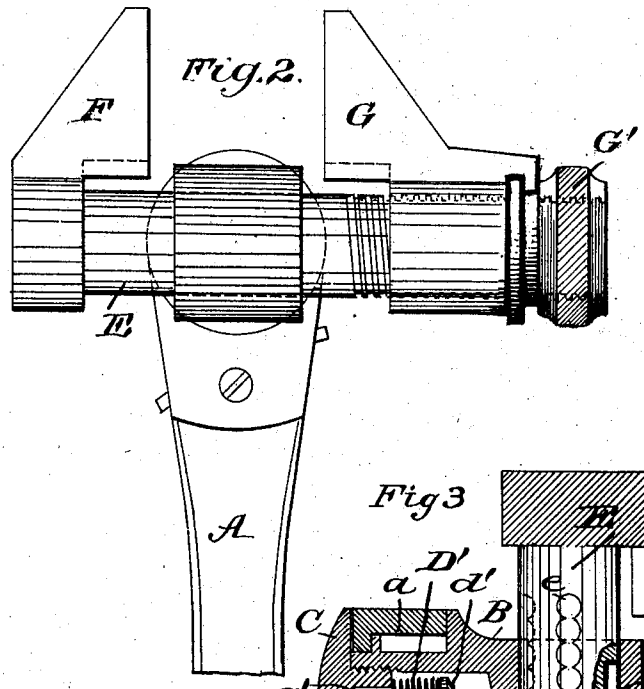


Fig 1

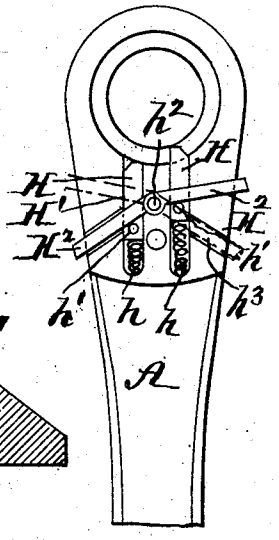


Fig 3

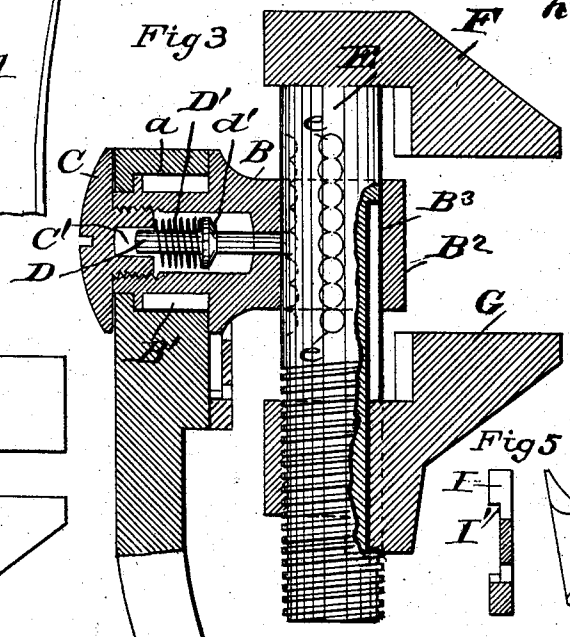


Fig 8

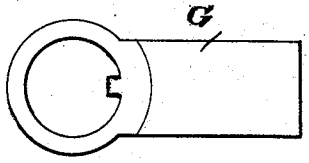


Fig 9

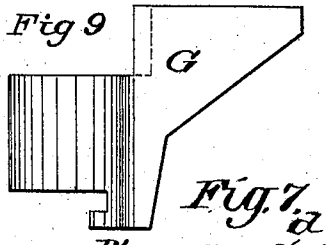


Fig. 7.

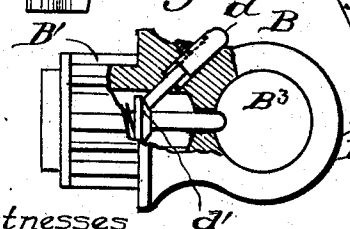


Fig 4

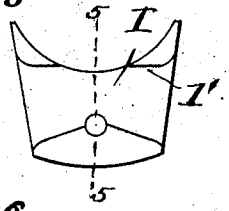
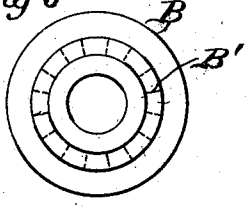
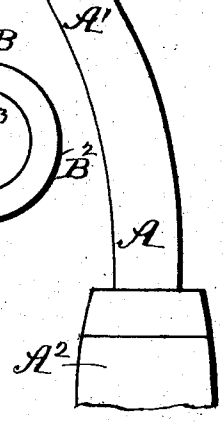


Fig 5

Fig 6





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No. 791,298. Patented May 30, 1905.

UNITED STATES PATENT OFFICE.

CHARLES H. SMITH, OF ALLENTOWN, PENNSYLVANIA, ASSIGNOR TO THEODORE F. AYRES, OF ALLENTOWN, PENNSYLVANIA.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 791,298, dated May 30, 1905.

Application filed September 17, 1904. Serial No. 224,818.

To all whom it may concern:

Be it known that I, CHARLES H. SMITH, a citizen of the United States, residing at Allentown, in the county of Lehigh and State of Pennsylvania, have made certain new and useful Improvements in Wrenches, of which the following is a specification.

My invention is an improvement in wrenches, and particularly in ratchet monkey-wrenches; and it consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a side view of a portion of a wrench embodying my invention. Fig. 2 is a face view thereof. Fig. 3 is a sectional view of the wrench. Fig. 4 is a view of the inner side of the cap-plate for the handle-bars of the pawls. Fig. 5 is a detail section of such plate on about line 5 5 of Fig. 4. Fig. 6 is a view of the outer end of the rotating ratchet-head. Fig. 7 is a side elevation of said head. Fig. 8 is an end view, and Fig. 9 is a side view, of the movable jaw.

In carrying out my invention I provide the wrench with a handle-bar A, which may be slightly deflected at A′ in order to bring the grip portion A^2 more nearly into line with the jaws for gripping the bolt head or nut. As best shown in Fig. 3 of the drawings, the rotating ratchet-head B turns in a bearing *a* in the handle A and is held in said bearing by the head-screw C, as best shown in Fig. 3. This head-screw C is socketed in its inner end at C′ to guide the outer end of the detent-pin D, which secures the shaft E, carrying the jaws F and G, in different adjustments within the head B, as more fully described hereinafter.

The head B is provided with the teeth B′, which are engaged by the pawls H, sliding in grooves H′ in the handle A, pressed by the springs *h* into engagement with the teeth B′ of the head B and provided with pins or projections *h*′, which are engaged by the handle-bars H^2, which latter pivot independently at their inner ends at h^2 and may, when adjusted from the position shown at the right in Fig. 1 to that shown at the left in said figure, secure their respective pawls H out of engagement with the teeth B′ of the head B. These handle-bars H^2 are of spring metal and are arranged, when adjusted to the position shown at the left in Fig. 2, to spring laterally into notches or recesses h^3, formed in the handle A in order to secure their respective pawls H clear of the teeth B′ of the head B. By this means one or the other of the pawls H may be adjusted clear of the teeth B′, according to the direction in which it may be desired to operate the head B, or both of the pawls H may be adjusted into engagement with the said teeth B′ in order to lock the head B from turning in the handle when a rigid wrench is desired. The outer edges of the pawls H and the handle-bars H^2 are covered by the cap-plate I, which is recessed in its inner face at I′ to permit the operation of the handle-bars H^2, the latter projecting laterally beyond the edges of the handle A, so they can be readily operated when desired. By the described construction the pawls can be quickly adjusted to both engage the teeth B′ or to cause one or the other of said pawls to engage the teeth of the ratchet-head, as may be desired, the handle-bars H^2 springing laterally into the recesses in the handle A when adjusted to the position shown at the left in Fig. 1, as before described. The rotating ratchet-head B is provided with a projecting portion B^2, having an opening B^3, forming a bearing in which the shaft E, carrying the jaws F and G, is movable both longitudinally and rotatably, being movable longitudinally in order to center the axis of the rotating head B between the jaws F and G, the latter being adjustable along its shaft E by means of the thumb-nut G′, as will be understood from Figs. 2 and 3, and the said shaft E being also adjustable rotatably in the bearing B^3 in order to provide a side wrench, as shown in Fig. 3, or an end wrench, as shown in Fig. 2, and means being provided whereby to secure the rotating shaft E in any desired adjustment within the bearing B^3. As shown, I provide the shaft E with sockets *e*, arranged in three series around the shaft E and also extending longitudinally in

the direction of the axis of said shaft and arranged for engagement by the detent-pin D, which is pressed by the spring D′ into engagement with a registered socket *e* in order to secure the head E in any particular adjustment, as will be understood from Fig. 3 of the drawings. To release the pin D to permit the readjustment of the shaft E with its jaws, I provide a releasing-pin *d*, movable through an opening in the head B and at an incline to the direction of length of the pin D and engaging at its inner end at *d′* a shoulder on the pin D to retract the said pin D when the push-pin *d* is pushed in, which may be readily effected by the thumb of the operator in manipulating the wrench. By this means the pin D may be released from engagement with the shaft E and the latter be moved either longitudinally or rotatably within the bearing in the head B in order to secure any desired adjustment of such part. It will be noticed from Fig. 3 that the wrench may be adjusted for use as a side wrench and from Fig. 2 that it may be adjusted for use as an end wrench, and it will be understood that the shaft E, carrying the jaws F and G, may be adjusted readily to fit in a corner either to the left or right by bringing the smaller jaw F to operate within said corner. Thus in the position shown in Fig. 2 the jaw F is in position to operate in a corner at the left. If it be desired to reverse the jaws F and G, the pin D may be released and the jaws F and G thrown down by turning the shaft E in its bearings B^3, when by giving the ratchet-head B a half-revolution to bring the jaws F and G to their uppermost position the jaw F will appear at the right and the jaw G at the left, as will be understood from said Fig. 2. It will be seen that thus I provide an end wrench with extension-jaws which may be readily adjusted to bring either of said jaws to either side desired.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The improvement in wrenches herein described, comprising the handle provided with a bearing for the ratchet-head and with slots leading therefrom for the pawls and with recesses adjacent to said pawls and adapted to receive the laterally-springing handle-bars for releasing the pawls, the pawls, the handle-bars for said pawls arranged to spring laterally into the recesses in the handle to hold the pawls retracted, the head having teeth for engagement by the pawls and provided with a projecting portion having a bearing for the jaw-carrying shaft, the detent-pin movable into said bearing, the shaft having jaws one of which is adjustable, said shaft being movable longitudinally and revolubly within the bearing in the head and provided with a plurality of a series of sockets for engagement by the detent-pin, and means whereby the detent-pin may be released from engagement with the jaw-carrying shaft, substantially as set forth.

2. The combination of the handle having a bearing for the ratchet-head and slots communicating with said head, the pawls operating in said slots and movable into and out of engagement with the ratchet-head, the wrench-handle being also provided with recesses for the handle-bars for releasing the pawls, and the handle-bars arranged to release their respective pawls and springing laterally into the recesses in the handle-bar of the wrench, the handle-bars of the opposite pawls operating independently substantially as set forth.

3. A wrench substantially as herein described, comprising a revoluble head provided with ratchet devices, and a jaw-carrier adjustable revolubly in said head and provided with jaws projecting in a direction at approximately a right angle to the axis of revoluble adjustment of said carrier, substantially as set forth.

4. The combination in a wrench, of a handle-bar, a head turning therein, a jaw-carrier which may turn and may be adjusted longitudinally in said head, and a detent for securing said jaw-carrier in any desired adjustment.

5. A wrench comprising a shaft provided with the opposite jaws one of which is adjustable, a head in which said shaft may turn and may be adjusted longitudinally, and means for securing the shaft in any desired adjustment.

6. The combination in a wrench, of a head, a shaft having jaws one of which is adjustable, said shaft being movable longitudinally in its head to center the same between the jaws, and means for securing the shaft in any desired adjustment.

7. The combination with the wrench-handle, of a head turning therein, means for operating the head, said head being provided with a bearing for the jaw-carrying shaft, the detent-pin carried by the head for securing such shaft in any desired adjustment, and the shaft provided with jaws one of which is adjustable, said shaft being movable longitudinally and revolubly in the head, substantially as set forth.

8. The combination of the handle-bar, the ratchet-head, pawl devices for operating the same, the jaws one of which is adjustable, and the shaft carrying said jaws and adjustable longitudinally and revolubly in the head, substantially as set forth.

9. The combination in a wrench, of the jaws one of which is adjustable, the shaft supporting said jaws, a head having a bearing in which said shaft may be turned and be adjustable longitudinally, and means for securing the shaft in any desired adjustment.

10. A wrench adapted for use as a side or

end wrench; and comprising opposing jaws, and a shaft connecting the same, one of the jaws being adjustable along the shaft, a handle-bar, a ratchet-head turning in said bar and having a laterally-extending portion provided with a bearing in which the shaft carrying the jaws is held and may be turned, and means for securing the shaft in any desired adjustment in the said bearing all substantially as described, whereby the wrench may be adjusted as a side or end wrench and may in the latter adjustment be set with the fixed or movable jaw to either side, substantially as and for the purposes set forth.

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Witnesses:
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