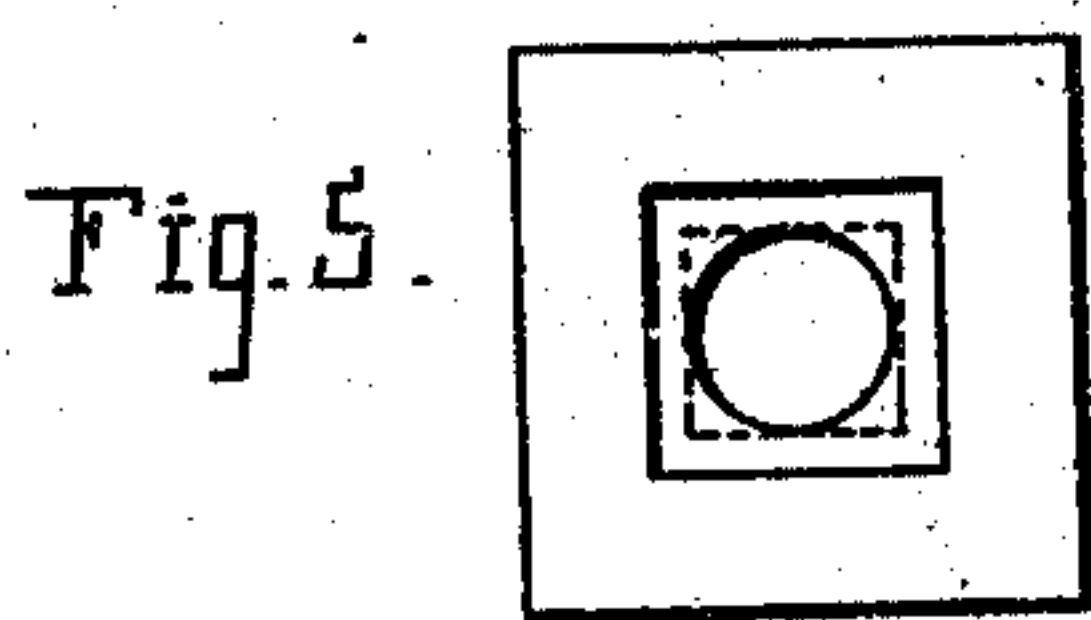
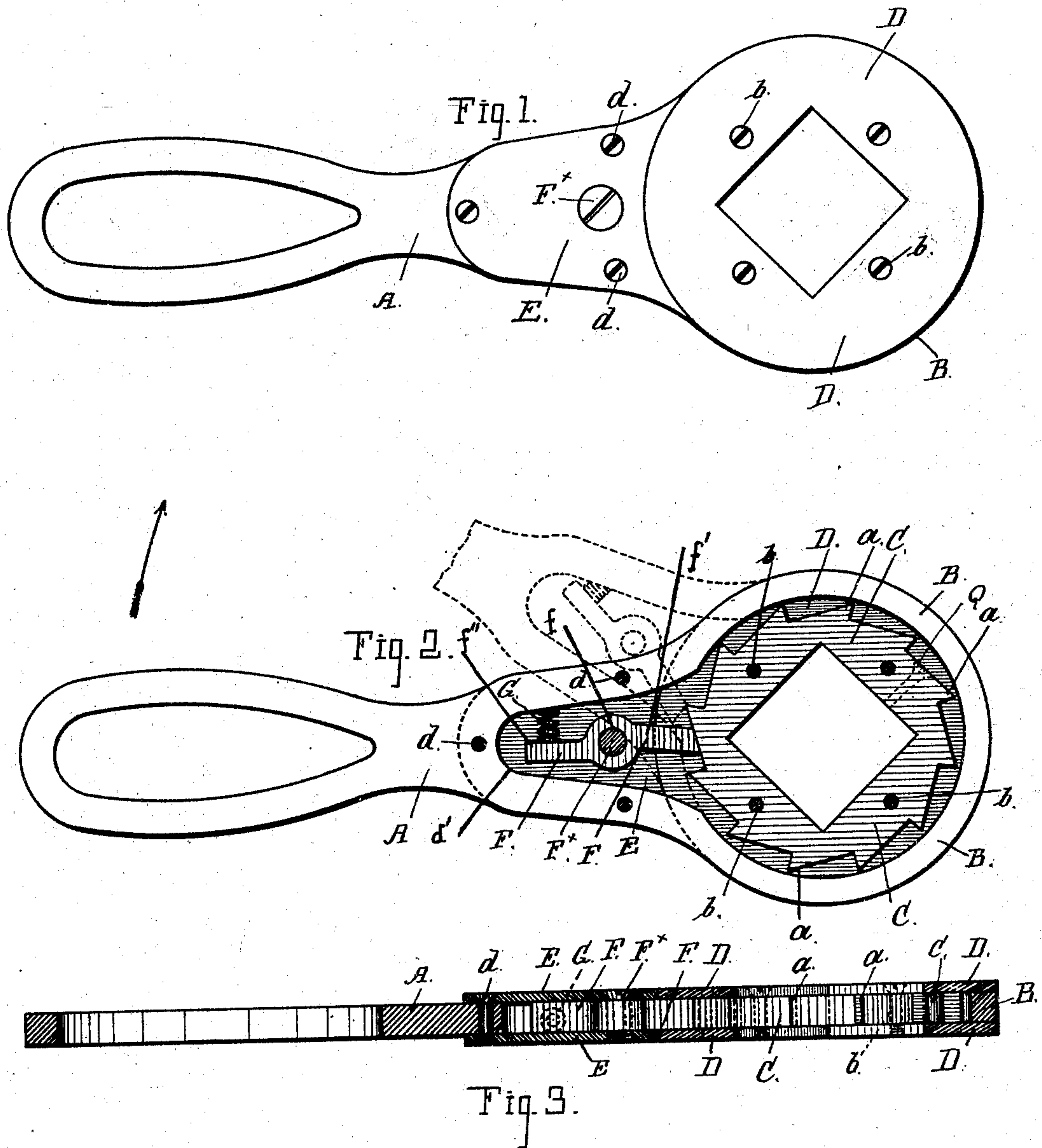


(No Model.)

W. H. DIEDRICK.
RATCHET WRENCH.

No. 502,410.

Patented Aug. 1, 1893.



Witnesses:

M. Regner
William Franklin

Inventor:

William H. Diedrick
By Smith & Osborn
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM H. DIEDRICK, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF
ONE-THIRD TO CASPER H. MASON, OF SAME PLACE.

RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 502,410, dated August 1, 1893.

Application filed December 21, 1892. Serial No. 455,861. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DIEDRICK, a citizen of the United States, residing at the city and county of San Francisco, in the State of California, have invented a new and useful Improvement in Ratchet-Wrenches, of which the following is a specification.

My invention relates to the production of a novel tool or contrivance employed as a ratchet wrench and has for its object the construction of a device more readily adapted for general use than those heretofore employed.

To attain this end my invention consists in a circular toothed wheel having a socket constituting a head operating in a boxing the sides of which are made integral with the wrench-frame. Combined with a spring-actuated pawl engaging with the teeth of the ratchet wheel and holding the wrench head in position, this pawl being of peculiar construction whereby it affords resistance to the backward turning of the head from two points in the handle, thereby reducing the liability of breakage which has hitherto been great in devices of this character. By such a construction the head is prevented from turning in the handle and the action of the wrench made positive and available in positions where the ordinary wrench cannot be employed to advantage.

In the accompanying drawings which form part of this specification, Figure 1 is a plan or top view of my wrench with top-plate in position. Fig. 2 is a plan or top view with top-plate removed and showing ratchet wheel and pawl in position. Fig. 3 is a vertical longitudinal section. Figs. 4 and 5 are a section and a plan view of an adjusting key which may be inserted in the socket in the wrench head.

Like letters of reference wherever they occur indicate corresponding parts in all the figures.

A represents the wrench-holder or handle of my wrench constructed with an annular ring B to receive the wheel C, which latter when in position is flush with the peripheral ratchet ring and provided with teeth *a, a, a, a*. The ratchet wheel is boxed in the ring by the two upper and lower face plates D, D, which are formed with sockets of the same

dimensions as that of the wheel the plates being also flush with the edge of the holder which forms support and ways also for the plates and overlap both the upper and lower faces of the annular ring. Screws *b, b, b*, pass through both the ratchet wheel and plates permitting the wrench head composed of the wheel and plates to turn freely in the annular ring without binding. The handle is also cut away or recessed back of the wrench head boxing, and two face plates E, E (curved at their lower ends) form a recess or chamber in which a pawl F operates on a pivot or pin F^x the latter passing through the pawl between its ends and through both of the plates thereby forming a boxing for the pawl. These face plates are held by the screws *d, d*, which pass through them and into the frame.

The pawl F moves freely on its pivotal point sufficient space being formed in the chamber for the purpose, and this pawl comprises a central hub *f* encircling said pivot, and two arms *f'* and *f''* projecting from opposite sides of said hub. The front arm *f'* stands approximately radial to the ratchet wheel and has its extremity beveled so as to engage the beveled faces of the ratchet teeth, while one side arm of this face is adapted to engage the flat faces of the ratchet teeth. A spiral spring G holds the pawl in place by bearing the rear arm *f''* down until it strikes the inner face of the wall of the pawl-boxing at the point *d'*, and at this time the side of the front arm *f'* engages against the teeth of the wheel and prevents the latter from turning backward; the beveled end of said arm being in close contact with the faces of the ratchet teeth. It will thus be seen that a backward movement of the ratchet head is resisted by the pivot F^x within the hub *f* and also by the rear arm *f''* bearing against the inner wall of the pawl-boxing; and when the handle is turned in the opposite direction, the pawl turns on its pivot and the spring is compressed as seen in dotted lines in Fig. 2.

As thus constructed the wrench is operated by working the handle backward and forward and by changing the tool from side to side a reverse action from right to left or left to right hand is had.

It should here be observed that keys of dif-

ferent dimensions can be employed and made adjustable in the hole in the rotating wrench head as shown in detail views 4 and 5—any suitable means being provided for holding
5 said keys detachably within the head, such as the set screw Q seen in dotted lines in Fig. 2.

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

- 10 In a ratchet wrench, the combination with the handle having boxings for the wrench head and for the pawl, and a head in the head boxing having ratchet teeth on its edge and a socket in its center: of a pivot-pin within
15 the pawl boxing, a pawl comprising a central hub mounted on said pin, a forward arm hav-

ing a beveled end adapted to bear against the beveled faces of the ratchet teeth, while the side of said forward arm bears against the flat faces of the teeth and a rearward arm adapted to contact with the wall of the pawl-boxing when the forward arm is under strain, and a spring holding said rearward arm normally in such contact, as and for the purpose set forth. 20

In testimony that I claim the foregoing I have hereunto set my hand and seal. 25

WILLIAM H. DIEDRICK. [L. S.]

Witnesses:

C. W. M. SMITH,

CHAS. E. KELLY.