

(No Model.)

C. T. BURR & G. B. HANKINS.
WRENCH.

No. 461,603.

Patented Oct. 20, 1891.

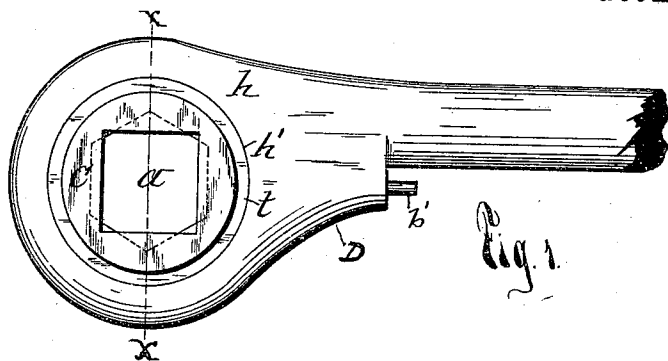


Fig. 1.

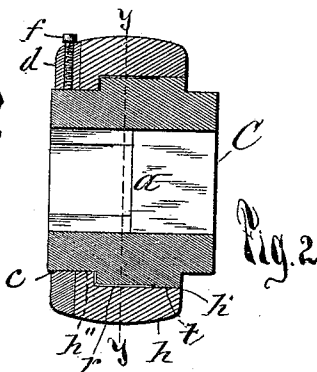


Fig. 2.

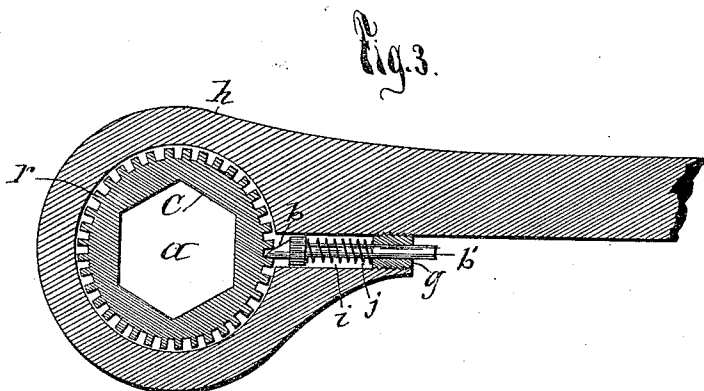


Fig. 3.

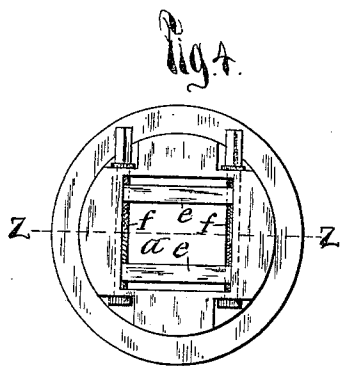


Fig. 4.

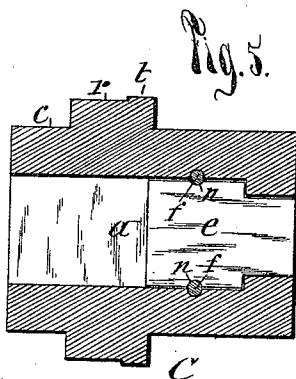


Fig. 5.

WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES T. BURR AND GEORGE B. HANKINS, OF ITHACA, NEW YORK,
ASSIGNORS OF ONE-THIRD TO CHRISTOPHER M. SHORTLE, OF SAME
PLACE.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 461,603, dated October 20, 1891.

Application filed June 10, 1891. Serial No. 395,741. (No model.)

To all whom it may concern:

Be it known that we, CHARLES T. BURR and GEORGE B. HANKINS, of Ithaca, in the county of Tompkins, in the State of New York, have invented new and useful Improvements in Wrenches, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of wrenches designated "ratchet-wrenches;" and the invention consists, essentially, of a wrench having pivoted to its head the grip, which engages the nut or bolt-head to be turned by the wrench, and which is formed with an annular ratchet on its exterior, and a pawl connected to the wrench-head engages the said ratchet; and the invention also consists in certain novel features of its details, as hereinafter fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a side view of a wrench embodying our invention. Fig. 2 is a transverse section on line *xx*, Fig. 1. Fig. 3 is a longitudinal section on line *yy*, Fig. 2. Fig. 4 is an end view of a wrench-grip made adjustable to different-sized nuts and adapted to be used in connection with our wrench; and Fig. 5 is a transverse section on line *zz*, Fig. 4.

Similar letters of reference indicate corresponding parts.

h represents the head of the wrench, which may be provided with any suitably-shaped handle, and *C* denotes the grip, which is pivoted to said head and has extending through its center the eye or socket *a*, which may be either square or hexagonal to fit correspondingly-shaped nuts. The said grip is detachably connected to the wrench-head in the following manner:

The wrench-head *h* is formed with an annular socket *h'* in one side and with the journal-bearing *h''*, of smaller diameter than the socket, extending from said socket through the opposite side of the head, and thus forming a circumferential shoulder or offset between the socket and journal-bearing.

The grip *C* is formed with the annular ratchet *r* and collar *t* on one side of the ratchet which collar is of the same or nearly the

same diameter as the socket *h'*, and from the opposite side of the said socket extends the cylindrical hub or journal *c*, of the same or nearly the same diameter as the journal-bearing *h''*. Said grip is inserted into the head *h* from the side in which the socket is located, and when in place the ratchet *r* and collar *t* are seated in the socket *h'* of the wrench-head, and the hub *c* projects through and is journaled in the bearing *h''*. The journals and ratchet of the grip are thus housed or inclosed and in a great measure protected from dust and grit. The said grip projects from opposite sides of the wrench-head for the purpose hereinafter explained.

To retain the grip *C* in the head *h*, a collar *d* is slipped onto the hub *c* and up against the side of the head *h* and firmly secured to the hub *c* by a set-screw *f*, as shown.

The described attachment of the grip *C* to the wrench-head *h* allows the grip to be readily reversed in its position in the head when desired to operate the wrench in the opposite direction. To effect the reversing of the said grip it is only necessary to remove the collar *d*, withdraw the grip *C* from the wrench-head, and, after turning it end for end, replacing it in the wrench-head and securing the collar *d* or similar collar to the opposite protruding end of the grip.

b represents the pawl, which engages the ratchet *r*, and has one side of its engaging end beveled to allow the pawl to slip over the teeth of the ratchet in moving the wrench in one direction, the opposite side of the pawl being adapted to engage the ratchet-teeth and compel the ratchet to turn with the wrench. To allow the said pawl to be readily removed for repairs or renewal when required, or allow the action of the wrench to be reversed without changing the position of the grip *C* in the head *h*, we form the wrench-head with an enlargement *D*, projecting from one side of the handle of the wrench, as shown in Figs. 1 and 3 of the drawings. This enlargement is provided internally with a channel *i*, extending radially from the socket *h'* through the said enlargement and screw-threaded in its outer end. In the said channel is seated the longitudinally-movable pawl *b*, which en-

gages the ratchet *r*. From the said pawl extends a stem *b'*, which passes through a tubular plug *g*, screwed into the outer end of the channel *i* and removable therefrom. The
 5 outer end of the stem protrudes to afford a hold by which to draw the pawl outward and be turned into a reverse position when desired. By removing the plug *g* the pawl can be removed when desired for repairs or re-
 10 newal. A spiral spring *j* surrounds the stem inside of the channel *i* and bears with opposite ends on the inner end of the plug *g* and rear end of the pawl *b*, and thereby forces the pawl toward the ratchet *r*.

15 The described wrench is especially well adapted for turning the nuts of railway-rail splices, and inasmuch as both square and hexagonal nuts are used on such rail-splices we prefer to make the socket *a* square at one
 20 end and hexagonal at the opposite end, and thus adapt the wrench for operating on either style of nuts.

To render the grip *C* adjustable for operating on different-sized nuts, we insert in the
 25 socket *a* of the grip *C* jaws *e e*, which are fitted movably transversely in said socket and provided with screw-threaded notches *n n* in their side edges, and transversely through the grip *C* and journaled therein are right
 30 and left screws *f f*, which engage the notches *n n*. The said screws are shouldered at opposite ends to prevent them from moving longitudinally, and by turning these screws the jaws *e e* are caused to either approach or

recede from each other and can thus be set 35 to grasp nuts of different sizes.

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

1. The combination of wrench-head *h*, 40 formed with the annular socket *h'* in one side and with a journal-bearing *h''* in the opposite side and an offset between them, the grip *C*, formed with the ratchet *r* and journal *c* on one side of said ratchet and seated remov- 45 ably by said journal and ratchet, respectively, in the socket *h* and bearing *h''* and protruding at opposite sides of the wrench-head, and the detachable collar *d*, retaining the grip in said head, substantially as described and 50 shown.

2. The combination, with the grip *C*, provided with the ratchet *r*, of the wrench-head *h*, formed with the enlargement *D* and with the channel *i* in said enlargement, the tubular 55 plug *g*, secured removably in the outer end of said channel, the pawl *b*, seated in the channel and having the stem *b'* extending through the plug, and the spring *j*, bearing with opposite ends on the plug and back of the pawl, 60 substantially as described and shown.

In testimony whereof we have hereunto signed our names this 2d day of June, 1891.

CHARLES T. BURR. [L. S.]
 GEORGE B. HANKINS. [L. S.]

Witnesses:

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