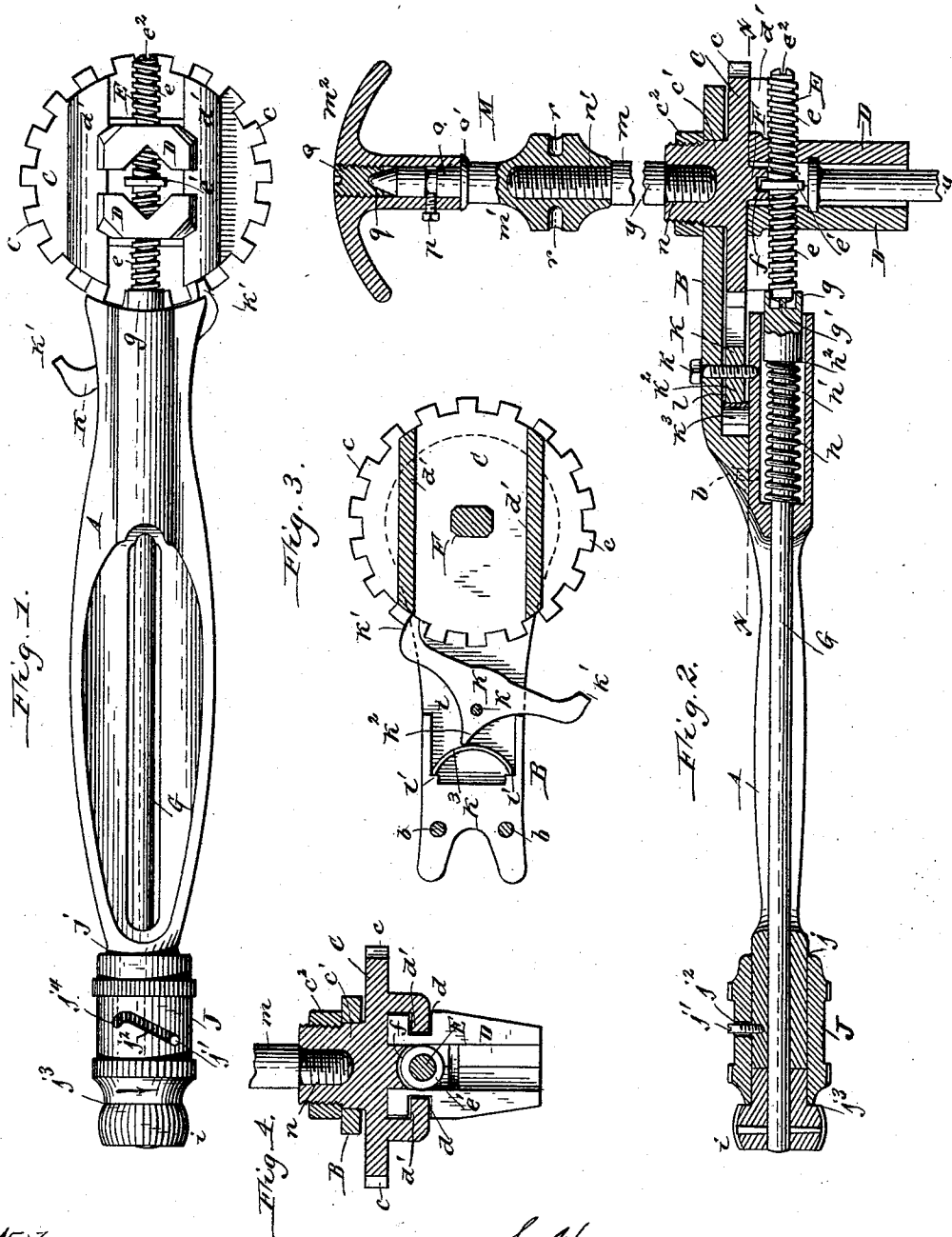


(No Model.)

S. HUSSEY.
RATCHET WRENCH.

No. 484,753.

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Witnesses:
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UNITED STATES PATENT OFFICE.

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RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 484,753, dated October 18, 1892.

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To all whom it may concern:

Be it known that I, SILVANUS HUSSEY, a citizen of the United States, residing at Brant, in the county of Erie and State of New York, have invented new and useful Improvements in Ratchet-Wrenches, of which the following is a specification.

This invention relates to that class of ratchet-wrenches which are provided with a rotating ratchet-disk carrying adjustable clamping-jaws and a pawl secured to the handle of the wrench and engaging with the teeth of the ratchet-disk, whereby the ratchet-disk and clamping-jaws are rotated by a forward- and-backward movement of the handle.

The object of my invention is to produce a ratchet-wrench of this character which shall be simple and inexpensive in construction and which can be readily converted into a ratchet brace or drill.

In the accompanying drawings, Figure 1 is a front elevation of my improved ratchet-wrench. Fig. 2 is a longitudinal section thereof at right angles to Fig. 1. Fig. 3 is a longitudinal section in line *xx*, Fig. 2. Fig. 4 is a transverse section in line *yy*, Fig. 2.

Like letters of reference refer to like parts in the several figures.

A represents the handle of the wrench, and B is a bar or shank forming an extension of the handle and secured with its inner end to the rear side of the handle by screws *b*.

C represents a ratchet-disk provided on its periphery with teeth *c* and on its rear side with a central hub or boss *c'*, arranged in a circular opening formed in the outer end of the shank B. The outer end of the boss or hub is provided with an external screw-thread, which receives a clamping-nut *c''*, whereby the ratchet-disk is pivotally secured to the shank of the handle.

D D represent two laterally-extending jaws arranged to move radially toward and from each other on the ratchet-disk. These jaws are arranged on opposite sides of the center of the disk and each jaw is provided with grooves *dd*, which engage with parallel guide rails or ways *d' d'*, formed on the face of the ratchet-disk.

E represents an adjusting-screw whereby the jaws are adjusted toward and from each

other on the guide-rails *d'*. This adjusting-screw is arranged centrally between the guide-rails *d'*, and is provided with right and left hand screw-threads *ee*, which engage with corresponding screw-threaded openings formed in the jaws. The adjusting-screw is provided with an annular collar or flange *e'*, arranged centrally between the threaded portions of the screw, and this flange or collar rests in a slot *f*, formed in a central support or bearing F, secured to the ratchet-disk between the jaws and the guide-rails, whereby the adjusting-screw is held against lengthwise movement and the jaws are compelled to move equally toward and from the center of the ratchet-disk when the adjusting-screw is turned. The outer ends of the adjusting-screw are provided with transverse slits *e''*, and the inner end of a rod G engages in one of said slits for turning the screw and adjusting the jaws. The rod G is arranged lengthwise in the handle A and is journaled in bearings formed at the outer end and near the inner portion of the handle. The inner end of the rod G is provided with a cylindrical socket *g* and a transverse rib *g'*, which engage with the adjacent end of the adjusting-screw when the latter is arranged in an axial line with the rod. The rod G is forced against the end of the adjusting-screw with its transverse rib in engagement with the transverse slit in the adjacent end of the adjusting-screw by a coil-spring *h*, arranged in a socket or recess *h'* in the handle. The spring *h* surrounds the rod and bears with its ends against the bottom of the socket *h'* and a shoulder *h''*, formed on the rod. The outer end of the rod G is provided with a thumb piece or collar *i*, which bears against the outer end of the handle and limits the forward or inner movement of the rod by the spring. When the inner end of the rod G is coupled with the adjusting-screw, the latter can be readily turned for adjusting the position of the jaws of the wrench by turning the thumb piece or collar *i*.

J represents a sleeve surrounding the outer cylindrical portion *j* of the handle and bearing against the collar *i* of the sliding rod G.

j' represents a pin secured to the cylindrical portion *j* of the handle and projecting through an inclined or cam slot *j''*, formed in the sleeve

J. Upon turning the sleeve in the direction of the arrow in Fig. 1 the pin on the handle engaging with the cam-slot in the sleeve will cause the latter to move lengthwise and engage against the shoulder j^3 of the thumb-piece, whereby the latter and the rod attached thereto are moved outwardly. In moving the adjusting-rod outwardly its inner end is disengaged from the adjusting-screw and the spring h , surrounding the rod, is compressed. By turning the cam-sleeve in the opposite direction the spring h is permitted to draw the adjusting-rod inwardly and couple the latter with the adjusting-screw.

15 j^4 represents a notch formed at one end of the cam-slot and adapted to receive the pin j' , whereby the sleeve is prevented from turning in the opposite direction and the adjusting-rod is held out of engagement with the adjusting-screw.

K represents the pawl, which is pivoted to the shank of the handle and engages with the teeth of the ratchet-disk, whereby the latter is locked on the handle and caused to turn with the handle. The pawl K is arranged in a recess l , formed in the handle-shank, and is pivoted therein by a pin or bolt k . The ends of the pawl project outwardly on opposite sides of the handle, and each end of the pawl is provided with a tooth or nose k' , which is adapted to engage between the teeth of the ratchet-disk. The pawl is provided in rear of its pivot with an arm or trip-finger k^2 , which bears against a spring k^3 , seated in the recess in the handle-shank, whereby the tooth at either end of the pawl is held in engagement between the teeth of the ratchet-disk. The spring k^3 is preferably U-shaped, with its bent or middle portion bearing against the arm k^2 of the pawl, and its ends resting on shoulders l' , formed in the recess l of the handle-shank. The teeth of the pawl which engage with the ratchet-disk are provided with straight or abrupt outer faces and inclined or beveled inner faces which permit the pawl to ride over the teeth of the ratchet-disk without turning the latter upon swinging the handle in one direction and cause the ratchet-disk to be locked by the pawl and turn with the handle when the latter is swung in the opposite direction. By disengaging both teeth of the pawl from the ratchet-disk and engaging the inner end of the stem or rod with the adjusting-screw the ratchet-disk is locked against movement in either direction and the wrench can be used as an ordinary wrench.

M represents a brace whereby pressure may be applied to the tool which is clamped between the jaws of the wrench. This brace consists, essentially, of a shank m , feed-block m' , and a breast-plate m^2 . The shank is provided with screw-threaded portions at opposite ends, one of which engages with a screw-threaded socket n , formed centrally in the boss or hub of the ratchet-disk. The opposite end of the shank engages with a similar screw-threaded socket n' , formed in one end

of the feed-block. The opposite end of the feed-block is provided with a neck or extension o , having a collar o' . The breast-plate is provided with a socket which surrounds the neck of the feed-block and bears against the collar o' . The breast-plate is held against lengthwise movement on the feed-block by a set-screw p , engaging in an annular groove formed in the neck o .

Q represents a screw-plug, which fits into the outer portion of the socket of the breast-plate and is provided on its inner end with a cavity q , which receives the tapering end of the feed-block. r represents a number of openings formed in the side of the feed-block, whereby the latter is turned by a suitable tool inserted in the openings r .

When it is desired to use the wrench as a ratchet-brace or breast-drill, the feed-block and shank are firmly screwed together, so as to form a rigid connection, and the free end of the shank is secured to the boss or hub of the ratchet-disk. For machine or other heavy work the breast-plate can be removed by loosening the set-screw and the tapering end of the feed-block be supported against some fixed object which resists the backward movement of the tool. As the tool enters the work the distance between the tool and the feed-block is lengthened by turning the feed-block, which causes the latter to move lengthwise on the screw-thread of the shank and effect a feed for the tool.

My improved wrench can be manufactured at comparatively small cost, and with the addition of the brace M can be readily converted into a ratchet-brace or ratchet-drill in a very simple manner.

I claim as my invention—

1. The combination, with the ratchet-disk and the handle movably attached thereto, of clamping-jaws supported on said disk, an adjusting-screw engaging with the clamping-jaws, and an adjusting-rod supported on the handle and adapted to be connected with the adjusting-screw of the clamping-jaws, substantially as set forth.

2. The combination, with the ratchet-disk provided with a central hub and a handle supported on said hub, of the adjustable clamping-jaws supported on guides formed on said disk, an adjusting-screw engaging with said jaws, and a separate adjusting-rod extending through the handle and adapted to be connected with the adjusting-screw, substantially as set forth.

3. The combination, with the ratchet-disk provided with a central hub and a handle supported on said hub, of the adjustable clamping-jaws supported on guide-rails formed on the ratchet-disk, an adjusting-screw engaging with said jaws and provided with end slits, and an adjusting-rod extending through the handle and provided at one end with a socket and a transverse rib adapted to engage with one end of the adjusting-screw, substantially as set forth.

4. The combination, with the ratchet-disk provided with a central hub and a handle supported on said hub, of the adjustable jaws movably supported on guide-rails formed on said disk, an adjusting-screw engaging with said jaws, an adjusting-rod engaging with said adjusting-screw, and a spring whereby the rod is held in engagement with said screw, substantially as set forth.

5. The combination, with the ratchet-disk, a handle or shank pivotally secured to said disk, and clamping-jaws movably supported on said disk, of an adjusting-screw engaging with said jaws, an adjusting-rod journaled in said handle and adapted to be connected with the adjusting-screw, and a sleeve arranged on the handle and engaging with said adjusting-rod, substantially as set forth.

6. The combination, with the ratchet-disk, a handle or shank pivotally secured to said disk, and adjustable clamping-jaws supported on the disk, of an adjusting-screw engaging with said jaws, an adjusting-rod movably supported in the handle and adapted to be connected with the adjusting-screw, a rotating sleeve arranged on said handle and provided with an inclined slot, and a pin secured to the adjusting-rod and engaging in the slot of the sleeve, substantially as set forth.

7. The combination, with the ratchet-disk,

a handle or shank pivotally secured to said disk, and adjustable clamping-jaws supported on said disk, of an adjusting-screw engaging with said jaws, an adjusting-rod movably supported in said handle, a spring whereby the adjusting-rod is held in engagement with the adjusting-screw, a thumb piece or collar secured to the adjusting-rod, and a cam-sleeve surrounding the handle and engaging with the thumb-piece, whereby the adjusting-rod is disengaged from the adjusting-screw, substantially as set forth.

8. The combination, with the ratchet-disk, a handle or shank pivotally secured to said disk, and adjustable clamping-jaws movably supported on said disk, of an adjusting-screw engaging with said jaws, an adjusting-rod supported in said handle and adapted to be connected at one end with the adjusting-screw, a thumb-piece secured to the opposite end of said rod, a rotating sleeve bearing against said thumb-piece and provided with a cam-slot, and a pin secured to said handle and engaging with said cam-slot, substantially as set forth.

Witness my hand this 13th day of July, 1891.

SILVANUS HUSSEY.

Witnesses:

JNO. J. BONNER,

EMIL NEUHART.