No. 620,461. Patented Feb. 28, 1899.

C. H. LAMBKIN.

WRENCH.

(Application filed Mar. 11, 1898.)

(No Model.)

Fig. 1.

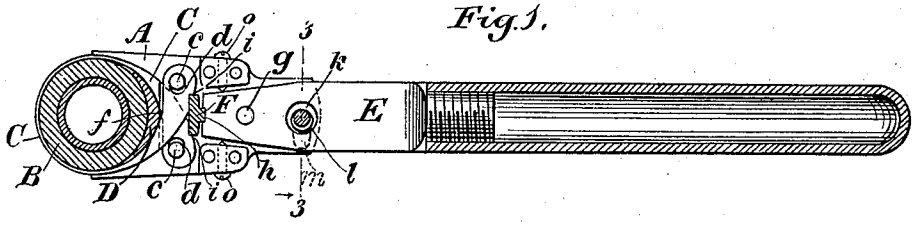



Fig. 4.

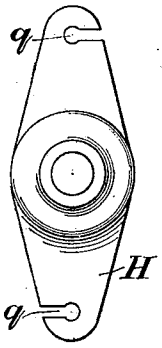



Fig. 5.

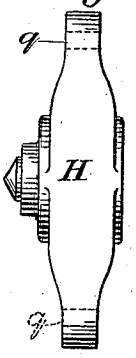



Fig. 3.

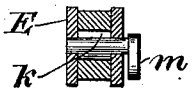



Fig. 6.

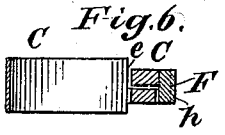



Fig. 7.

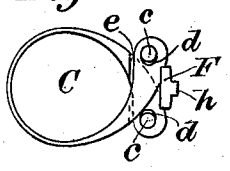
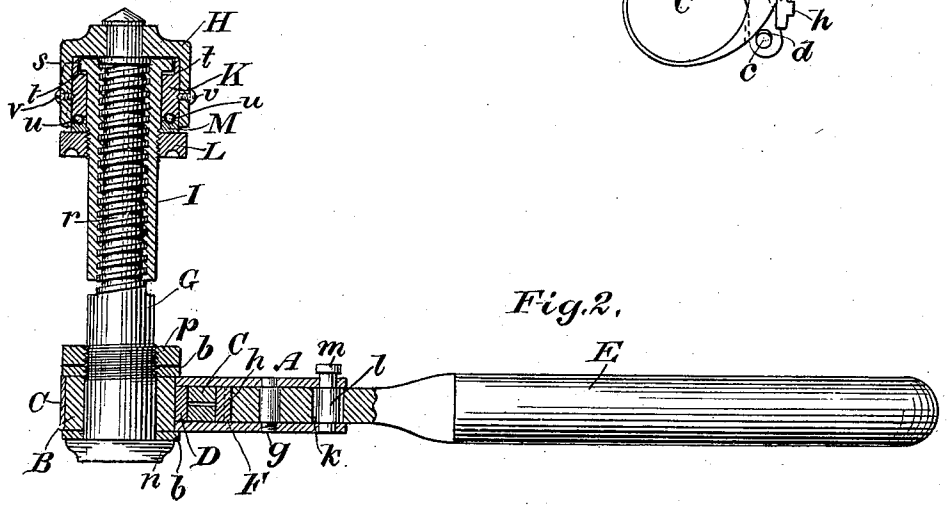



Fig. 2.

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# UNITED STATES PATENT OFFICE.

CHARLES H. LAMBKIN, OF MOUNT VERNON, NEW YORK.

## WRENCH.

SPECIFICATION forming part of Letters Patent No. 620,461, dated February 28, 1899.

Application filed March 11, 1898. Serial No. 673,430. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. LAMBKIN, a citizen of the United States of America, and a resident of Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

My invention relates to that class of tool-stocks or wrenches in which a radial revoluble handle is so connected with the spindle or tool-holder as to permit said handle to turn in one direction independently of the holder and when turned in the opposite direction to cause the holder to turn also.

My improvements consist generally in a revoluble head supported in a frame and supporting the tool-holder or spindle, in combination with a single lever pivoted on said frame, a strap encircling the revoluble head, and means connected with the handle by which its movement in one direction will cause the strap to bind the head and turn the same and when said lever is moved in the opposite direction will loosen the strap and allow the frame to revolve loosely on the head.

My improvements also consist in certain other features and details, as more particularly hereinafter described.

In the accompanying drawings, Figure 1 illustrates a plan view of my invention, but with the binding-cap of the tool-holder or spindle and its tightening-nut removed. Fig. 2 is an elevation of a drill-stock or that portion of a wrench which embodies my invention, but with the operating mechanism in vertical section. Fig. 3 is a cross-section on the line 3 3, Fig. 1. Fig. 4 is a plan view of the binding-cap. Fig. 5 is an elevation of the same. Figs. 6 and 7 are respectively a cross-section and a plan of the binding-strap for the revoluble head and the block for tightening and loosening the same on said head.

Similar letters represent like parts in all the figures.

Referring to the drawings, the letter A designates the frame, which supports the operating mechanism of the wrench or drill-stock. This frame A has an arched or partially circular recess in its outer end, in which rests the revoluble head B, said head being provided with outwardly-extending flanges *b b*, which bear upon the upper and lower plates, respectively, of the frame A in order to prevent the head B from transverse movement in said frame.

C is a strap, preferably of steel or other metal, surrounding the head B and with its ends overlapping each other and connected with the frame A by pins *c c*, and elongated holes or recesses *d d*, with which said pins engage. The portions of the strap C near their ends are cut away, as shown at *e* in Figs. 6 and 7, so that when said ends overlap each other the combined width of said ends will be no greater than the other portion of the ring.

D is a concavo-convex shoe inclosed between the head B and the strap C, with the concave side contiguous with the periphery of the head and the outer or covex side of the shoe D contiguous with the strap C. When the strap C is loose and in its normal position, it may be turned loosely on the head B, and also turn the shoe D without moving said head; but when the strap C is made to bind the shoe D against the head B when said strap is turned it will also turn said head through the frictional binding of the shoe D. In order that the strap C may bind more closely the shoe D when tightened upon it, its convex side is made angular, as at *f*, midway between its ends.

E is the lever-handle, pivoted to the frame A, back of the strap C, at *g*, and F is a block or shoe interposed between the inner end of said handle and the strap C. This block F is provided with a central nib *h*, which fits loosely into a corresponding recess in the inner end of the handle E. The two angular ends of the shoe F also enter corresponding notches or recesses *i i* in the edges of the strap C. Back of the pivot *g* in the handle E is a hole *k*, and an eccentric or cam *l*, journaled in the frame A, enters said hole *k*, the cam-surface of said eccentric being adapted to bear upon a portion of the inner surface of the hole *k*. (See Fig. 1.) A handle *m*, secured to the journal of the cam *l* and outside the frame A, provides means by which said cam may be turned to operate the handle E or frame A in either direction. The portion of the hole *k* not filled by the cam *l* permits a little play of the handle E on the frame A, so that the shoe-block F may force the strap C against

the shoe D and bind the head B, a continuation of the movement of the handle causing the head to revolve. The return movement of the handle E causes it to first move the distance between the cam *l* and the inner edge of the hole *k* and by the corresponding movement of the block F loosens the strap C and shoe D from the head B, and this permits the frame A and strap C to turn loosely on said head. The turning of the cam *l* to the position shown in Fig. 1 or in the reverse position of the same permits the shoe-block D to bind either end of the strap C, so that the movement of the handle may cause the head B to turn in either direction, as desired. Adjusting-screws *o o* pass through the two opposite sides of the frame A, and their inner ends face the two opposite sides of the lever E. These screws are for the purpose of regulating the distance that the inner end of said lever may travel in case the wearing of the strap C, the cam *l*, or hole *k* causes the play of said lever to be too great, the ends of said screws constituting stops for the sides of said lever.

G is an ordinary drill-spindle, in the lower end of which a drill or nut-key may be inserted. On said lower end of the spindle G is a circular flange *n*, and encircling the spindle, above the frame A, is a binding-nut *p*, which engages with a screw-thread on the spindle G. By means of the binding-nut *p* the spindle G is tightened on the head B. The flanges *b b* also act to keep the strap C in place.

H is the binding-cap for the spindle G and which rests on top of said spindle. Said cap is provided with arms extending outwardly in opposite directions, and in each of these arms is a slot *q* for attaching a chain which may extend down from said arms and under the work which is to be operated on under the drill-spindle, said chain providing means for bearing the drill or other tool down on the work. The cap H surrounds the upper end of the interiorly-threaded spindle-sleeve I, a screw-thread *r* on the spindle G permitting it to have a rotary and longitudinal or vertical movement in said sleeve. A ring K is interposed between the cap H and sleeve I, and a flange *s* on the upper end of said sleeve rests upon a circular shoulder *t* on top of the ring K.

L is a nut encircling the spindle I and engaging with a screw-thread on the same, and M is a washer interposed between said nut and the lower edge of the ring K, ball-bearings *u* being interposed between the nut L and washer M. A binding-screw *v* extends through the cap H into the ring K to prevent their rotation in relation to each other. The purpose of the nut L is to support the ring K, from which the sleeve I is suspended.

Whenever the head B is turned, the spindle G turns also, and by reason of its screw *r* moves longitudinally in the sleeve I, feeding up or down in said sleeve. The tightening of the washer M by the nut L causes the flange *s* of the sleeve I to bind against the shoulder *t* of the ring K, thus preventing the sleeve I from turning and causing the spindle G to turn independently of said sleeve I and get its greatest feed. If, however, the nut L is loosened somewhat from the washer M, the turning of the spindle G will allow the sleeve I to also have a slight rotary play in the ring K, and thus give a less feed to the spindle, the ball-bearings *u* preventing friction when the nut L and washer M turn with the sleeve I.

It will be evident that the drill-spindle and its supporting devices may be omitted and the rest of the device used simply for a wrench, or another device may be inserted in the revoluble head in place of the tool-spindle.

What I claim as new is—

1. In a tool-stock or wrench, the combination of a revoluble head supported in a frame, a lever pivoted on said frame, a strap encircling the revoluble head, and having its ends crossed and attached to said frame, a shoe or block loosely engaging with the end of the lever and the two ends of said strap, whereby the same may be tightened on the head or loosened therefrom by the movements of the lever, all as set forth.

2. In a tool-stock or wrench, the combination of a revoluble head supported in a frame, a lever pivoted on said frame, a strap encircling the revoluble head and having its ends crossed and attached to said frame by pins and elongated holes or slots, and an intermediate device engaging with both ends of said strap, and by which the same is tightened on the head or loosened therefrom by the movements of the lever, all as set forth.

3. In a tool-stock or wrench, the combination of a revoluble head supported in a frame, a lever pivoted on said frame, a strap encircling the revoluble head and having its ends crossed and attached to said frame, an interposed shoe between the head and the strap, and means connected with said lever by which its movement in one direction will cause the strap to bind the head and turn the same, and when said lever is moved in the opposite direction, will loosen the strap, and allow the frame to revolve loosely on the head, all as set forth.

4. In a tool-stock or wrench, the combination of a revoluble head supported in a frame, a strap encircling said head and having its ends crossed and attached to said frame, a lever pivoted on the frame, an intermediate device engaging with both ends of said strap and with the end of the lever, and a connection between the lever and the frame for regulating the play of the one on the other, all as set forth.

5. In a tool-stock or wrench, the combination of a revoluble head supported in a frame, a strap encircling said head and having its ends crossed and attached to said frame, a

lever pivoted on the frame, an intermediate device engaging with both ends of said strap and with the end of the lever, and an adjustable cam or eccentric on the frame inclosed in a hole in the lever, all as and for the purpose set forth.

6. In a tool-stock or wrench, the combination of a revoluble head supported in a frame, a strap encircling said head and having its ends crossed and attached to said frame, a lever pivoted on the frame, an intermediate device engaging with both ends of the strap and with the end of the lever, and adjusting-screws passing through the sides of the frame and toward the sides of the lever, all as and for the purposes set forth.

7. In combination with the spindle of a tool-stock or wrench provided with a feeding-screw, a sleeve surrounding said spindle and engaging with the screw of the same, a cap bearing on the upper end of said spindle, a collar interposed between said cap and sleeve, and a flange on said sleeve resting on said collar, an adjusting-nut surrounding the sleeve below said collar, an interposed washer between the nut and collar, and interposed antifriction-bearings between said washer and collar, all as and for the purposes set forth.

Signed by me, at New York, N. Y., this 8th day of January, 1898.

CHARLES H. LAMBKIN.

Witnesses:

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A. FABER DU FAUR, Jr.