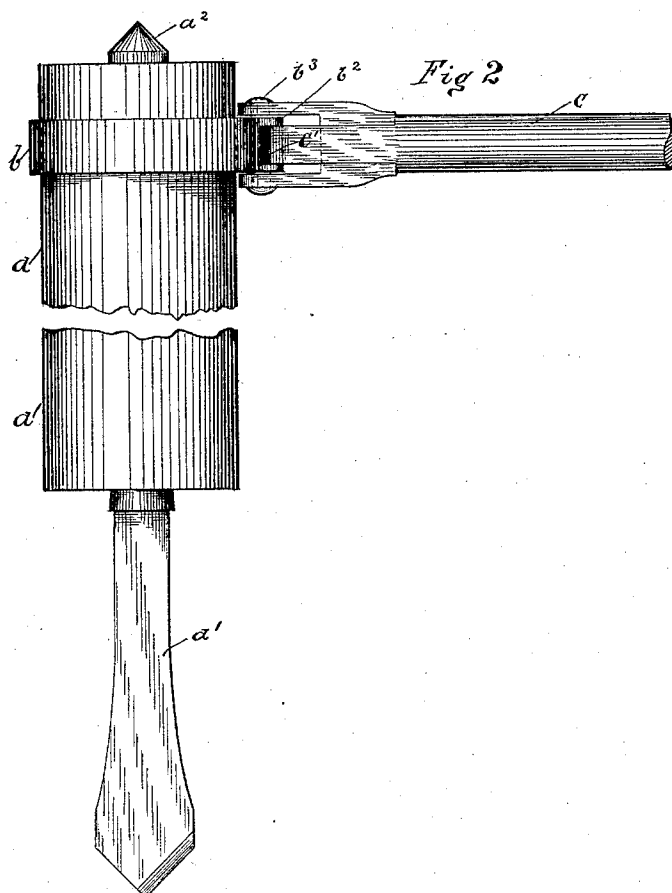
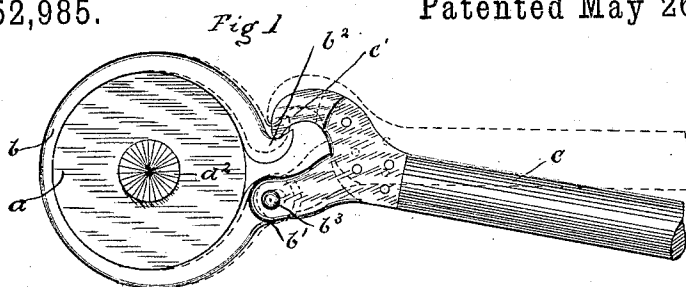


(No Model.)

E. SCHMITZ.  
RATCHET DRILL.

No. 452,985.

Patented May 26, 1891.



Witnesses  
H. J. Taylor  
Wm E. Clarke?

Inventor  
Ernst Schmitz  
By his Attorney  
Wm Zimmerman

# UNITED STATES PATENT OFFICE.

ERNST SCHMITZ, OF CHICAGO, ILLINOIS, ASSIGNOR TO EDWARD MELCHIOR,  
OF SAME PLACE.

## RATCHET-DRILL.

SPECIFICATION forming part of Letters Patent No. 452,985, dated May 26, 1891.

Application filed December 12, 1890. Serial No. 374,459. (No model.)

*To all whom it may concern:*

Be it known that I, ERNST SCHMITZ, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ratchet-Drills, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 shows my improved ratchet-drill as seen in plan view on its upper end and in closed or working condition of the parts, the broken lines showing their position when the lever *c* and clamp or band *b* are moving backward or are open. Fig. 2 shows Fig. 1 in side view with part of the cylinder which holds the drill broken away.

Like letters refer to like parts.

The object of my invention is to improve the construction of ratchet-drills by substituting for the common ratchet and pawl a simpler and more efficient device; and to attain said desirable ends I construct my improved ratchet-drill in substantially the following manner, namely: On the smooth cylinder *a* I put an open band *b*. Said band may be made of any metal having sufficient elasticity to spring back from its close embrace of the cylinder when released and which may be made thinner between its open ends, as shown in the drawings. One of the ends of said band is formed into a loop *b'* and the opposite end into a hook or lug *b<sup>2</sup>* nearly at right angles with the end of the band, so that the outer end of said lug or hook is turned back toward the band, substantially as it is shown in the drawings. To the loop end of said band I attach a lever *c*, which has two rigid arms or lugs, which pass over the edges of the loop *b'*, and through said arms and loop passes a bolt *b<sup>3</sup>*, upon which said lever is hinged to move freely. The end of said lever between said arms is formed into a hook or finger *c'* with a round point, which engages with the hook *b<sup>3</sup>* of said band in the form and position as clearly shown in Fig. 1. A drill-center *a<sup>2</sup>* of the usual form is placed on the cylinder *a* opposite the drill. From the foregoing it will be observed that

the novel parts of my device are the band *b*, lever *c*, and the construction and uniting of their ends adapted to work on any cylindrical body *a*.

The mode of operation of my said new device is substantially as follows, namely: The band *b* may fit loosely on the smooth cylinder *a* or its ends may be made to spring out from it slightly, as shown by the broken outlines. When the lever *c* is actuated in the direction from the broken and the full lines, the hook *c'* presses on the lug *b<sup>2</sup>*, and thus throws the ends of the band *b* nearer together. This causes the said band to embrace the cylinder *a* with great force and friction, whereby it may be made to turn the cylinder *a* against any resistance, however great, that may be thrown on it, and its strength overcome without permitting the said band to slip, even though it be most thoroughly lubricated, while at the same time only a scarcely-perceptible motion is given to the free ends of said band. It is obvious, therefore, that only a very slight reverse motion is necessary to allow the band to slip backward, and that by working said lever reciprocally, as in any ordinary ratchet-drill, the same rotary motion of the drill is obtained, and that said rotary motion may be made in either direction by simply reversing the edges of said band on said cylinder. It is also obvious that my said new construction of band and lever may be applied to turn any cylindrical body.

What I claim is—

1. The combination, with the continuous annular open and elastic band *b*, having the loop *b'* and hook *b<sup>2</sup>*, of the lever provided with rigid arms hinged to said loop *b'*, provided with a hook *c'*, adapted to engage with the hook end *b<sup>2</sup>* of said band and bring its free ends together, substantially as specified.

2. In a ratchet-drill, the combination, with the cylinder *a* and single open-end and elastic band *b*, having loop *b'* and hook *b<sup>2</sup>*, of the rigid armed and hinged lever provided with a hook *c'*, adapted to engage with the hook *b<sup>2</sup>* and bring the free ends of said band together, substantially as specified.

3. In a ratchet-drill, the combination, with  
the annular open and elastic band *b*, having  
a loop *b'* at one of its open ends and a hook  
*b*<sup>2</sup> on the other end, of the lever *c*, provided  
5 with rigid lugs and a hook *c'*, and a pin *b*<sup>3</sup>,  
whereby said band and lever are hinged to-  
gether and by their action adapted to draw

the free ends of said band toward each other,  
substantially as specified.

ERNST SCHMITZ.

Witnesses:

WM. ZIMMERMAN,

W. J. TAYLOR.