

(No Model.)

M. D. LUEHRS.
BOLT CUTTER.

No. 517,284.

Patented Mar. 27, 1894.

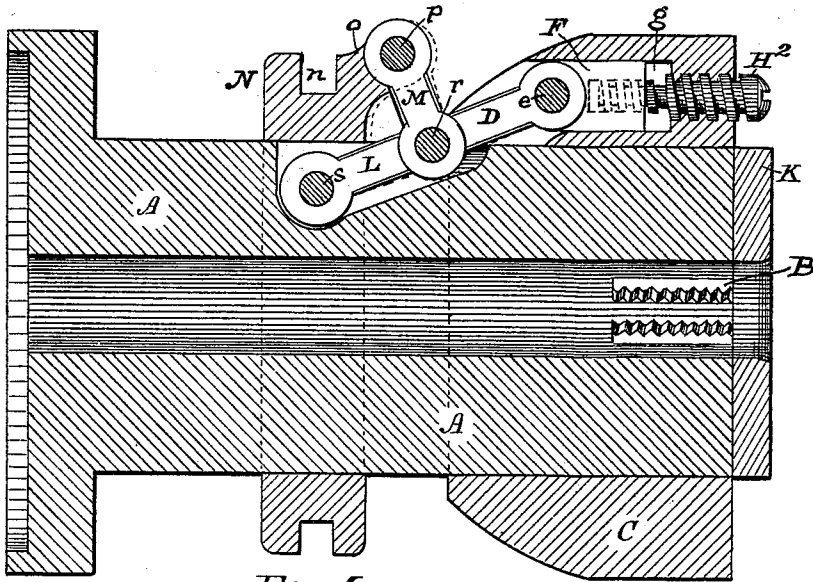
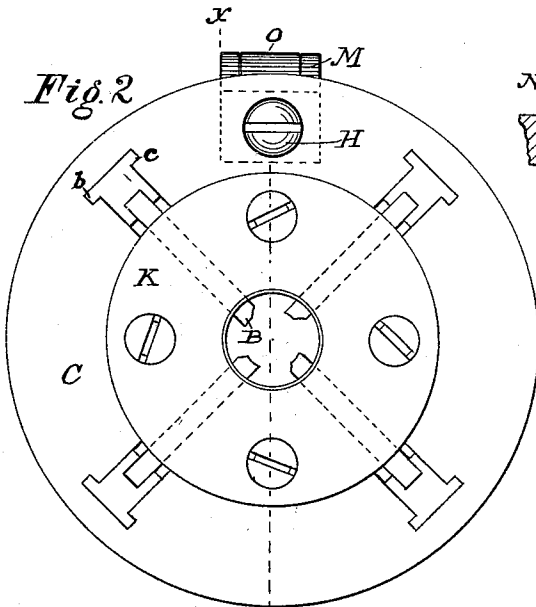


Fig. 1



WITNESSES: y

Louis R. Vorce.
Louis Buntius

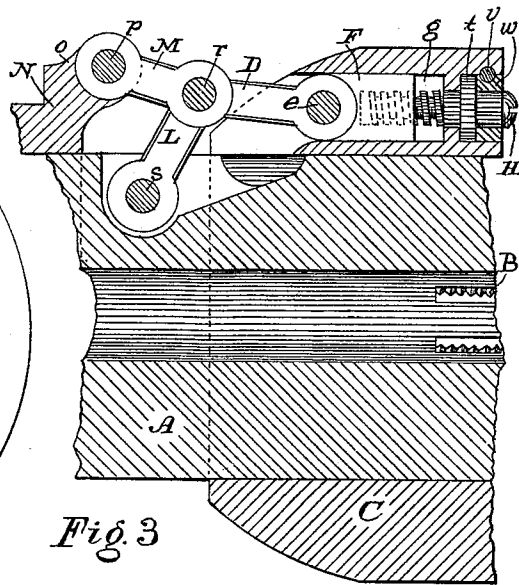


Fig. 3

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MICHEL D. LUEHRS, OF CLEVELAND, OHIO.

BOLT-CUTTER.

SPECIFICATION forming part of Letters Patent No. 517,284, dated March 27, 1894.

Original application filed August 16, 1893, Serial No. 483,278. Divided and this application filed September 30, 1893. Serial No. 486,919. (No model.)

To all whom it may concern:

Be it known that I, MICHEL D. LUEHRS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Bolt-Cutters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in bolt-cutters of the class wherein radial movement of the dies is effected by the sliding on the barrel of a die-ring with which the dies engage.

The object of the invention is to increase the efficiency of the apparatus and the ease of operating the same, and it consists in the construction, arrangement and combination of parts to attain those ends.

In the drawings Figure 1 represents a longitudinal section through a bolt-cutting die-head embracing my invention. Fig. 2 is a front end elevation of the same, in which the line $\alpha-\gamma$ indicates the plane of section shown in Fig. 1. Fig. 3 is a partial section in the same plane as Fig. 1, showing the position of the parts when the dies are retracted to clear the bolt and permit its withdrawal.

A represents the barrel or body of the head, having at its front end radial slots in which the dies B move, being held therein by a face plate K secured to the front end of the barrel. C is the die-ring sliding on the barrel, which it smoothly fits, and having internal rearwardly inclined ribs, faces, or grooves c , in which slide the similarly inclined ribs or shoulders b formed on the dies or die caps.

N is the clutch-ring, operated in the usual manner by a handle (not shown) which engages the groove n in the clutch ring, which latter slides smoothly on the barrel A, and is made to actuate the die-ring in the following manner. One or more links D are attached by a pivot e to a block F, which slides in a recess g in the die-ring, and is engaged by an adjusting screw H having a bearing in the die-ring C. A link or links L, pivoted to the barrel by a pivot s , is pivoted to the links D, forming a toggle, which, when the three piv-

ots are brought into line, as shown by full lines in Fig. 1, locks the die-ring in the closed position. The clutch-ring N is connected to the toggle by a link or links M, pivoted at their upper ends to the ring N, or preferably to a forward extending lug o thereon, by a pivot p , and at their lower end pivoted on the common pivot r which joins all the links together. While it is not essential, I prefer to so adjust the links that when the clutch-ring is forced forward as far as it can go the link M is thrown forward at its upper end slightly beyond a line at right angles to the line joining the pivots e and s , which brings the pivot r slightly below that line, as shown in dotted lines in Fig. 1. When in this position the back-thrust of the die-ring has no tendency to push back the clutch-ring, nor to open the toggle, but simply presses the joined ends of links M, D and L firmly against the barrel, and the possibility of links L lifting is prevented by the clutch-ring, which, when the dies are closed in, rests over the link L, as seen in Fig. 1. As a result of this construction no force whatever is required to hold the dies in a closed position where they are locked by the toggle as just described, and in closing the dies the thrust of the clutch-ring through link M on the toggle L, D, being practically without friction, requires vastly less power than has to be exerted on a dog or lever as at present employed. Moving the clutch-ring backward will obviously cause the link M to pull directly in the line of least resistance of the toggle, and will open the toggle, thereby bringing the parts into the open position shown in Fig. 3, with the least possible expenditure of power, and therefore with a saving of time as well as of wear. The depth to which the dies cut is regulated by sliding the block F in or out in the recess g by means of the adjusting screw H, which is threaded into block F and has a bearing in the die-ring, projecting at the front thereof so as to be easily accessible for turning. The screw H may have a simple swiveling bearing in the die-ring, as shown in Fig. 3, being provided with a collar t and secured in the die-ring by a bushing w , or if a greater range and finer degree of adjustability is required, may

be threaded into both block and die-ring, by threads of different pitch, as shown at H² in Fig 1.

I do not herein claim broadly the use of a toggle to connect the clutch-ring and die-ring, as that forms the subject matter of my pending application for patent filed August 16, 1893, Serial No. 483,278, of which this application is a division, but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a bolt-cutter head the combination with the barrel and the die-ring sliding thereon, of a toggle having an adjustable connection to the die-ring and a fixed pivotal connection to the barrel, a clutch-ring sliding on the barrel, and a link pivoted at one end to the clutch-ring and at the other to the center joint of the toggle, substantially as described.

2. In a bolt-cutter head the combination with the barrel and the die-ring sliding thereon, of a toggle having one end pivoted directly to the barrel and the other end pivoted to a block sliding in a recess in the die-ring, an adjusting screw threaded into said block and having a bearing in the die-ring, a clutch-ring sliding on the barrel, and a link pivoted at one end to the clutch ring and at the other to the center-joint of the toggle, substantially as described.

3. In a bolt-cutter head the combination with the barrel, the die-ring sliding thereon, and a toggle immovably pivoted to the barrel and movably pivoted to the die-ring, of a clutch-ring sliding on the barrel and connected by a link to the center joint of the toggle and adapted to force the outer end of the connecting link forward of a line at right angles to the line joining the pivots of the toggle when fully extended, so as to lock the toggle in the extended position, substantially as described.

4. In a bolt-cutter head the combination with the barrel and the die-ring sliding thereon, of the toggle having one end pivoted directly to the barrel and the other end pivoted to a block sliding in a recess in the die ring, an adjusting screw threaded through the die-ring and into the sliding block by threads of different pitch, a clutch-ring sliding on the barrel, and a link pivoted at one end to the clutch-ring and at the other to the center joint of the toggle, substantially as described.

In testimony whereof I hereto affix my signature in presence of two witnesses.

MICHEL D. LUEHRS.

Witnesses:

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WM. G. TAYLOR.