

(No Model.)

M. D. LUEHRS, Dec'd.

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BOLT CUTTER HEAD.

No. 583,062.

Patented May 25, 1897.

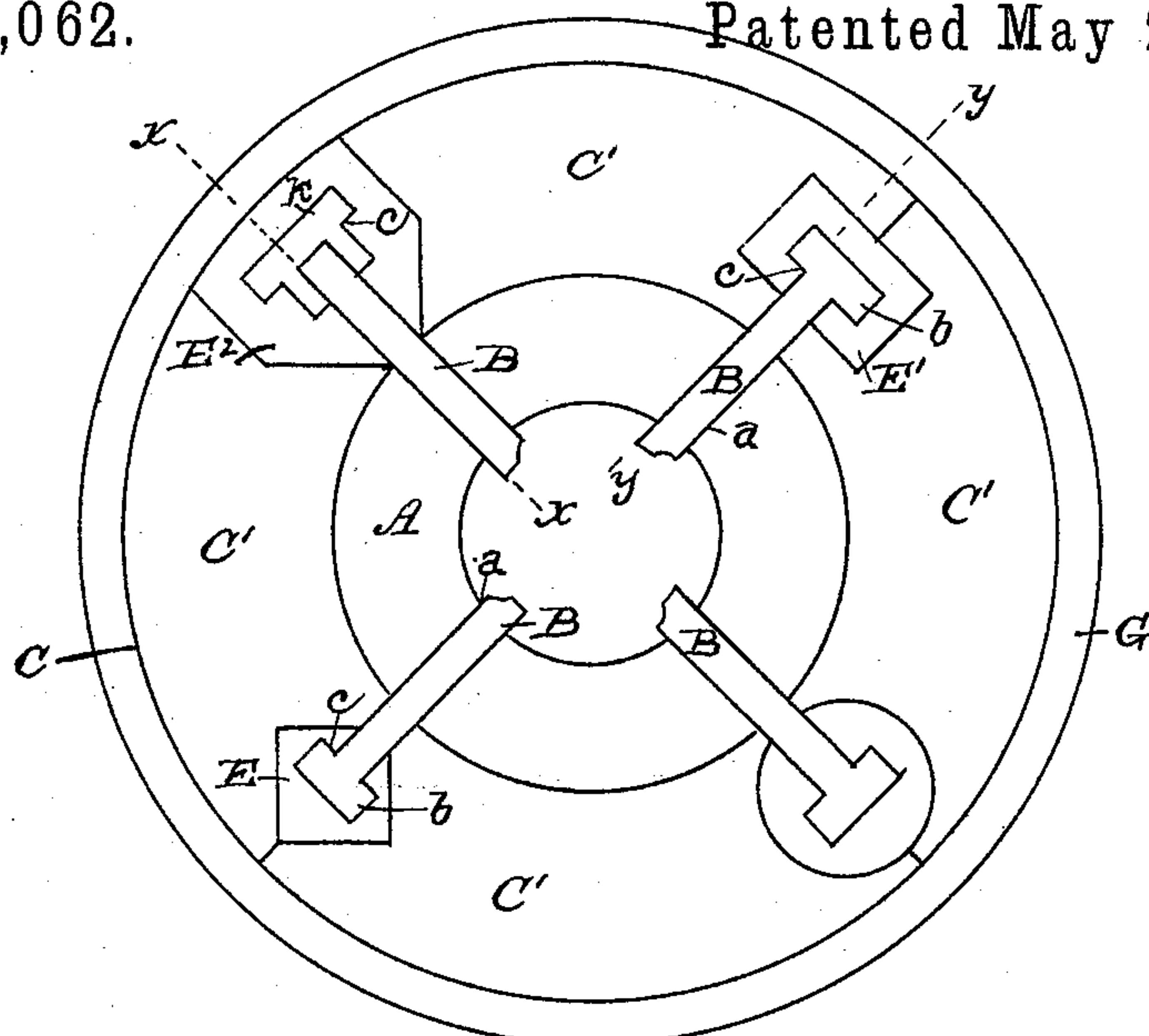


Fig. 1

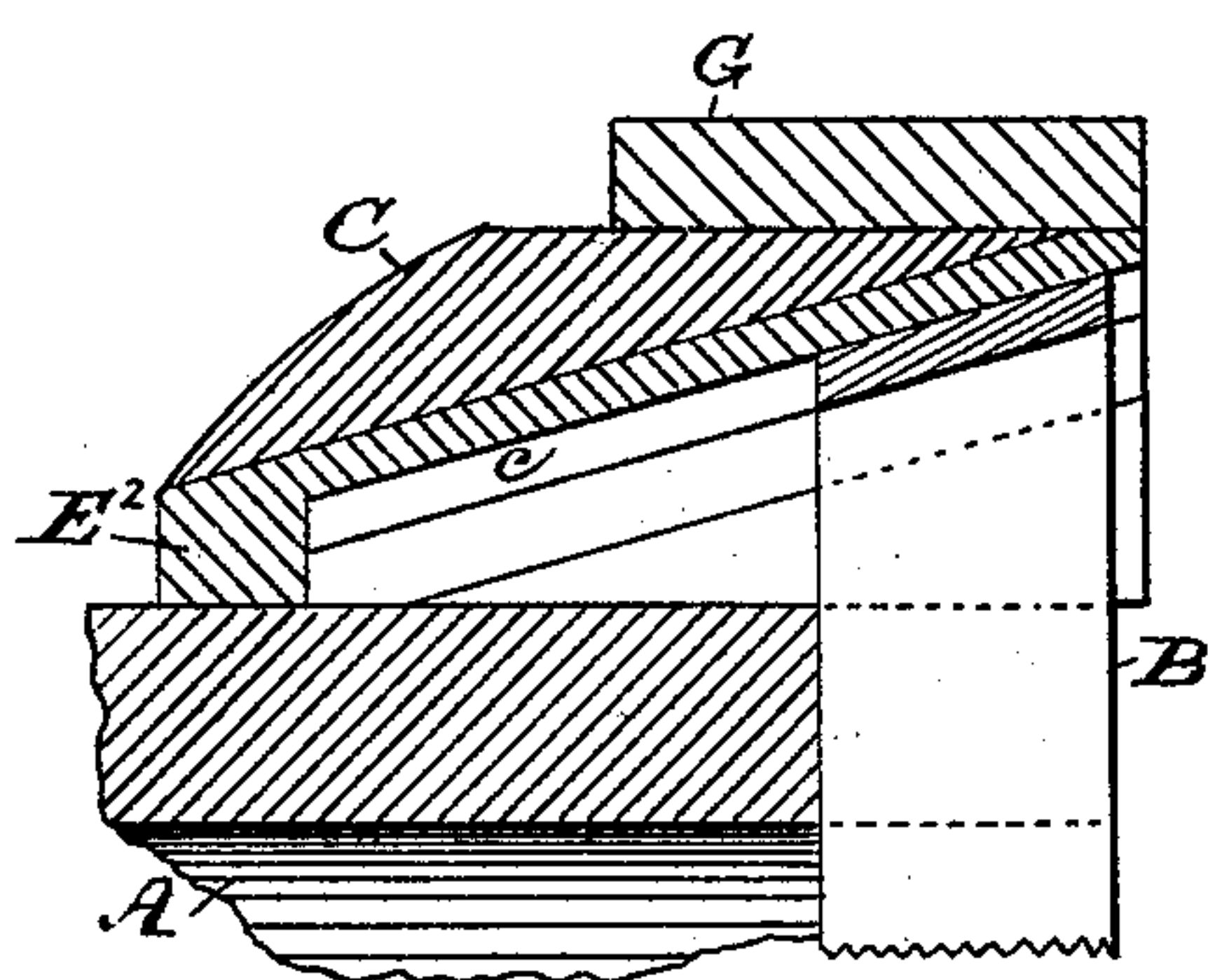


Fig. 2

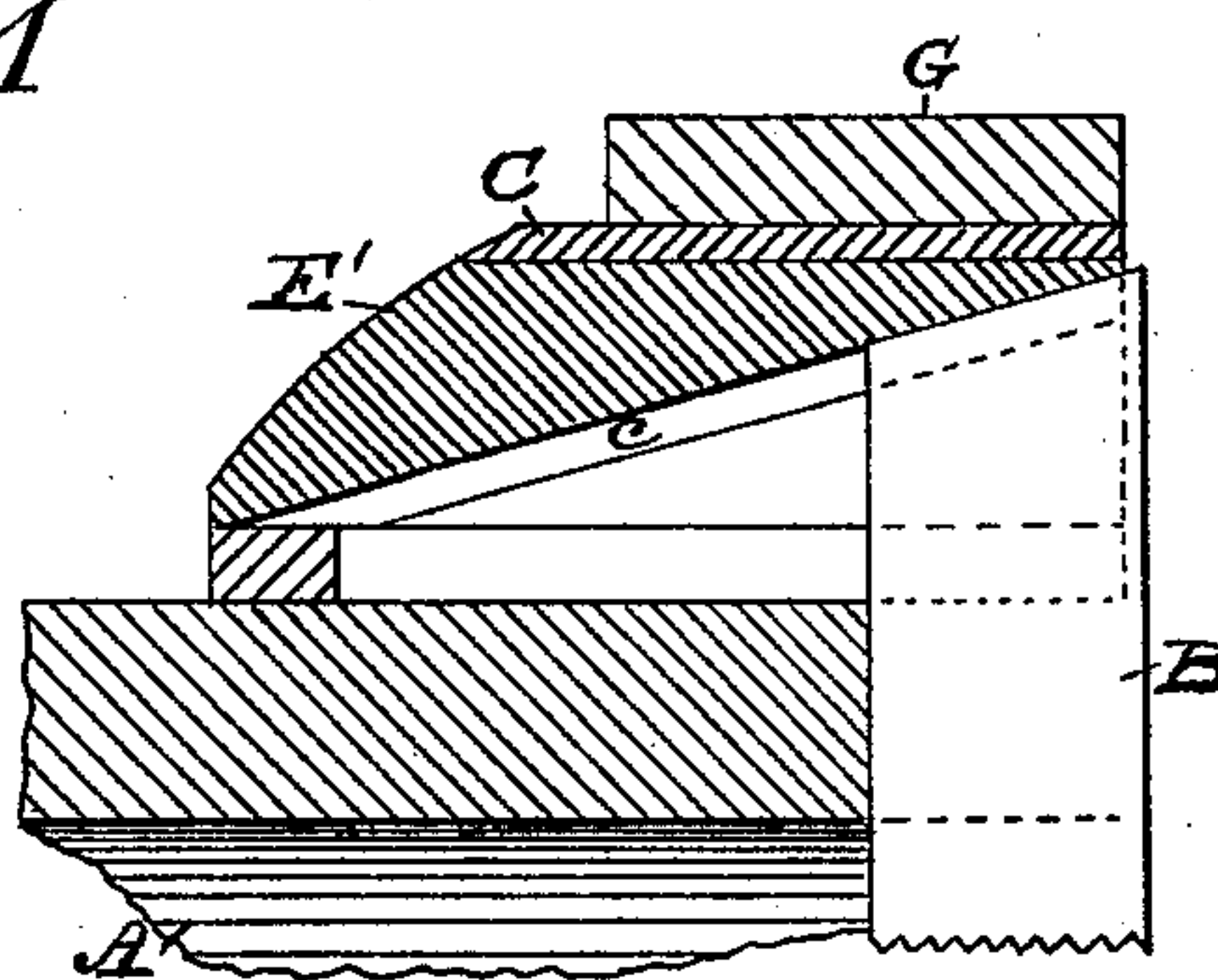


Fig. 3

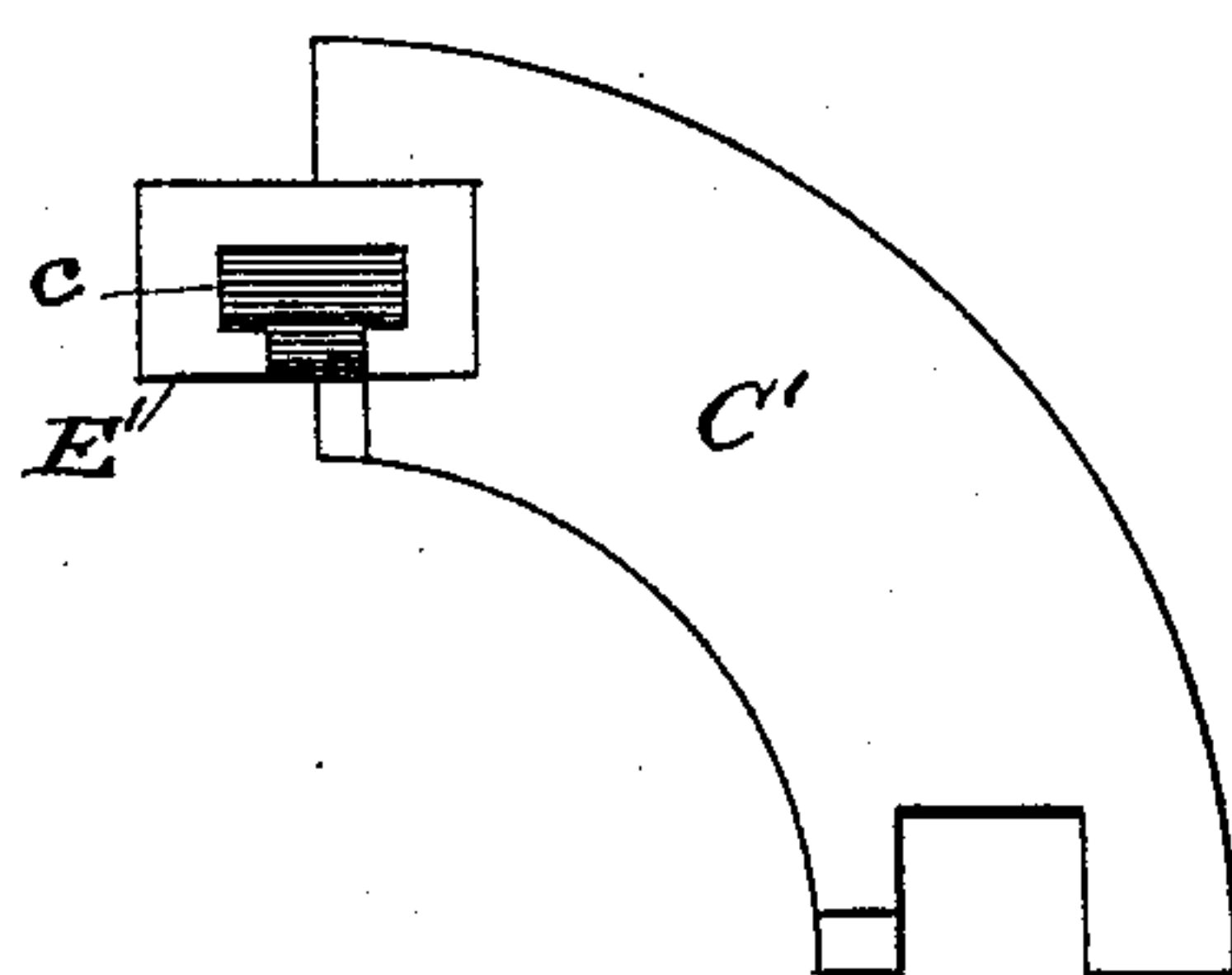


Fig. 4

Witnesses:

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# UNITED STATES PATENT OFFICE.

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EXECUTRIX OF SAID MICHEL D. LUEHRS, DECEASED.

## BOLT-CUTTER HEAD.

SPECIFICATION forming part of Letters Patent No. 583,062, dated May 25, 1897.

Application filed November 30, 1894. Renewed April 5, 1897. Serial No. 630,882. (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-Cutter Heads; 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-cutter heads. Its object is to improve the construction and increase the durability of the apparatus; and it consists in the novel features of construction, combination, and arrangement designed to secure such object, as hereinafter fully described, and pointed out in the claim.

In the drawings, Figure 1 represents in plan view the face of a bolt-cutter head constructed according to my invention. Fig. 2 is a partial sectional view taken on the line  $x x$  of Fig. 1. Fig. 3 is a like sectional view on the line  $y y$  of Fig. 1. Fig. 4 is a face view of one of the segments of the ring, showing the recess for the wearing-block, with one in place.

This invention relates to the class of bolt-cutter heads in which the opening and closing of the dies are effected by a sliding die-ring having inclined ways with which the dies or die-caps engage, a type of which class is shown in my former patent, No. 508,549, issued November 14, 1893.

In bolt-cutter heads it is almost impossible to prevent the chips and fine particles of metal produced in the cutting of the threads upon the bolt from falling or being thrown by the centrifugal force of the machine upon all the parts in proximity to the cutting-dies. The lubricant necessarily employed in the work also holds the fine particles in suspension and by the motion of the machine soon flows outward and over all parts of the cutter-head and by capillary attraction into all joints and crevices. When thus introduced between two moving surfaces, the fine particles of metal act like emery to grind out the surfaces between which they lie and soon produce a loose fitting of the surfaces, allowing successively-larger particles to be introduced as the

wear progresses until the rapidly-increasing wear of the parts allows chips and cuttings of metal to get in between the top of the die or die-cap and its guideway and causes the die when closed in to project too far and cut too deep, which throws nearly all the work on the one die and produces irregular diameter of the threads, breaking of the dies, and the necessity for repairing the head or substituting a new die-ring for the worn one. To obviate this loss and expense and reduce the wear to the lowest limits is one of the chief aims of my invention, and this I accomplish by reducing to the lowest possible limits the number of wearing parts. In the bolt-cutters now in use it is usual to move the dies either by sliding die-blocks, which move in seats cut in the barrel, (whereby the die-blocks are each subjected to an independent wearing which may, and often does, come chiefly on one or two of the blocks, causing the work to be thrown out of the center and increasing the load on one only of the dies, often breaking it and ruining the work,) or by a sliding die-ring, as in my patent above named, in which the wearing-surface is reduced to a single one, which, being continuous and of large surface, wears more equally and better preserves its centricity with the work. In all styles of bolt-cutter head there is, however, the liability of the dies themselves to wear in the die-seats and guiding-ways. This, as before stated, causes irregular work and necessitates the frequent renewing of the worn parts. In a bolt-cutter wherein the moving die-blocks are employed these, as well as the dies, must be replaced, and, being more expensive than the dies themselves, the expense of repairs is greatly increased. Inasmuch also as the wear is divided between the barrel itself and the die-blocks, the placing of new die-blocks in the barrel does not wholly remedy the defects caused by the wearing of the parts, while in the case of the die-ring any remaining wear of the barrel is completely compensated for by the equal thrust of the dies themselves on the die-ring. It remains therefore in the latter case merely to obviate or compensate the wear of the dies in their dieways, and these ends I attain by the construction hereinafter described. To



obviate such wear, I form the dieways in separate blocks of hardened steel, bronze, or other hard and durable metal, instead of forming such ways in the substance of the die-ring  
 5 itself, as usual, and I form the die-ring in sections, inserting the ways separately in the die-ring in their proper position and securing the sections together by an outer ring shrunk or forced on outside the sections, the die-  
 10 blocks being thus rigidly secured to the die-ring. By this means any wear of the dieways which cannot be made good by inserting new dies can be quickly and cheaply remedied by replacing the worn die-block with a  
 15 new one, and as the die-blocks can be made cheaply and in large quantity by machinery a new set can be sent with the new dies whenever required and at very much less cost than the wear can be remedied in any other  
 20 way. The result is that the life of the bolt-cutter head is very greatly prolonged, and consequently the cost of the bolts is reduced.

A represents the body or "barrel" of the head; *a*, the die-slots; B, the dies having  
 25 guiding-ribs *b b*, which slide in the inclined dieways *c c* of the die-ring C, which latter is operated by a clutch-ring in the usual way.

E E' E<sup>2</sup> are blocks or plugs of bronze, hardened steel, or other good wearing material,  
 30 which are of any desired shape and are inserted into the die-ring C and have the dieways *c c* cut therein. These blocks may either have the dieways cut in them before they are inserted in the die-ring, as is preferred, or  
 35 after they are inserted and secured in place by pins in the segments, the dieways being first cut in the blocks, which are then secured to the segments C', and then shrinking or forcing on over the segments C' the binding-

ring G, so as to form a complete die-ring practically solid. 40

The advantage of constructing the dieways separate from the die-ring is that a better wearing material can be used for the dieways than could with economy be used for the  
 45 entire die-ring, and in case of wear of the dieways or part of them the block containing the worn way can be replaced by a new one without losing the entire die-ring, as usually is necessary, and with less loss of time than  
 50 is possible by any construction now in use.

When dies with a die-cap are used, the block in which the ways are cut will of course be cut to conform to the die-cap, as shown in Fig. 1, where E<sup>2</sup> represents the inserted wear-  
 55 ing-block, and *k* the die-cap.

I am aware of the patents to D. W. Burnham, No. 185,723, C. C. Walworth, No. 251,080, and J. C. Williams, No. 434,898. Neither of these patents is of the die-ring  
 60 class, and they differ from my invention in that and other respects. I do not claim what is therein set forth; but

What I do claim is—

In a bolt-cutter head the combination with  
 65 the barrel slotted to receive the dies, of a die-ring formed in segments and having the dieways formed in separate interchangeable blocks of a harder wearing metal and rigidly secured to the segments, and a ring inclosing  
 70 said segments and binding them into a complete ring, substantially as described.

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

MICHEL D. LUEHRS.

Witnesses:

DANIEL M. LUEHRS,  
 ROLAND RIDER.