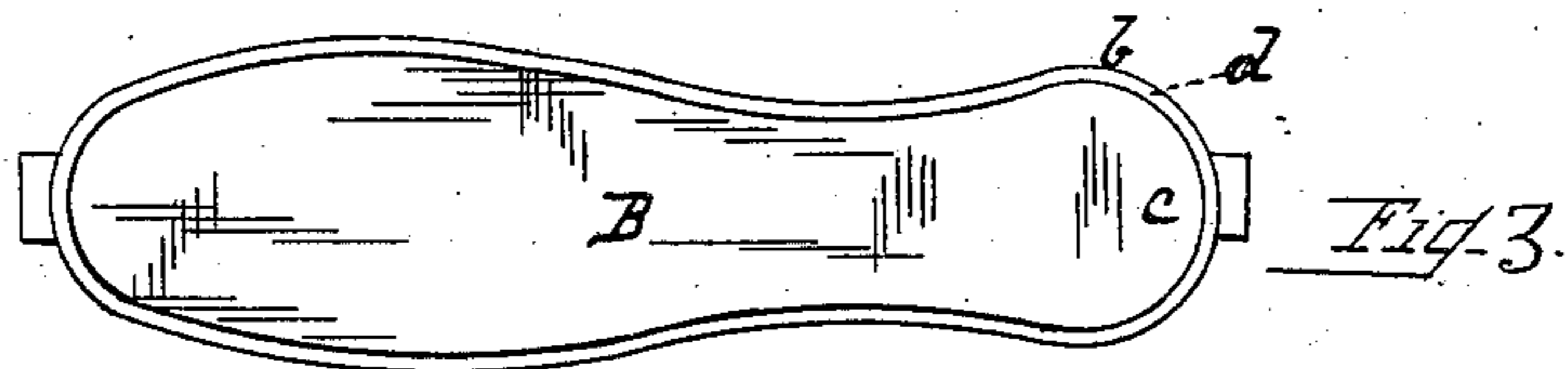
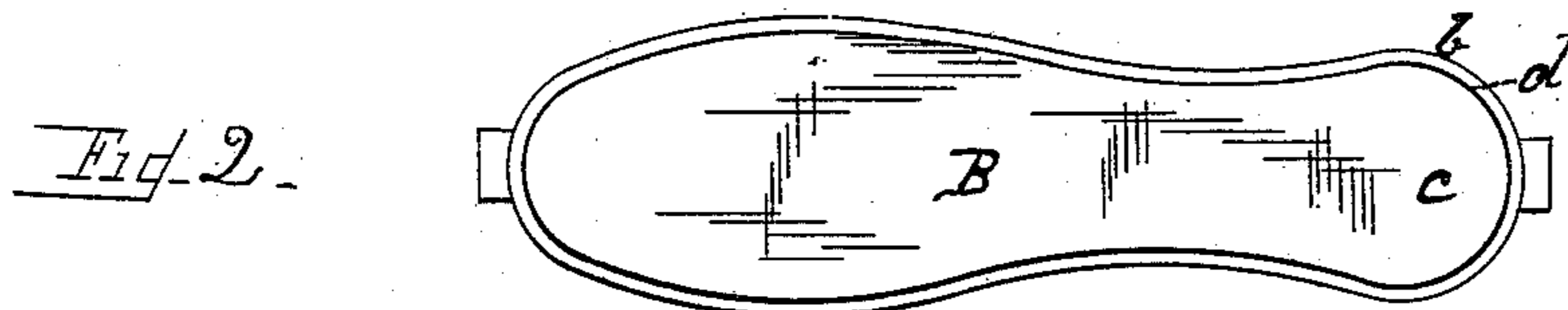
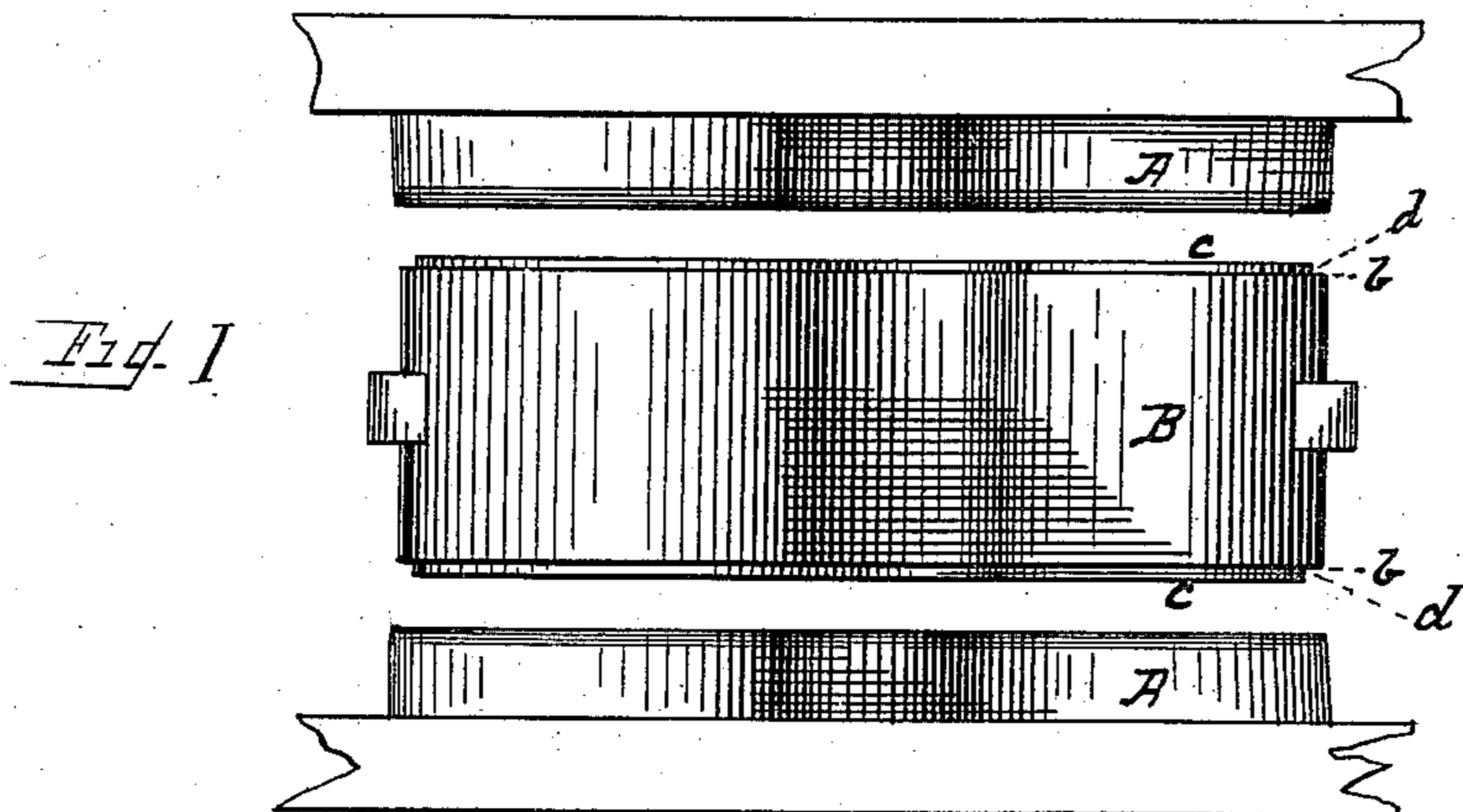


(No Model.)

3 Sheets—Sheet 1.

J. PARKER & M. L. GUNNING.  
MACHINE FOR CUTTING AND BEVELING FLEXIBLE MATERIAL.  
No. 357,024. Patented Feb. 1, 1887.



Witnesses  
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C. E. Morton

Inventors  
Jonas Parker  
Mark L. Gunning  
By their Attorney F. W. Ritter Jr

(No Model.)

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Fig. 5-

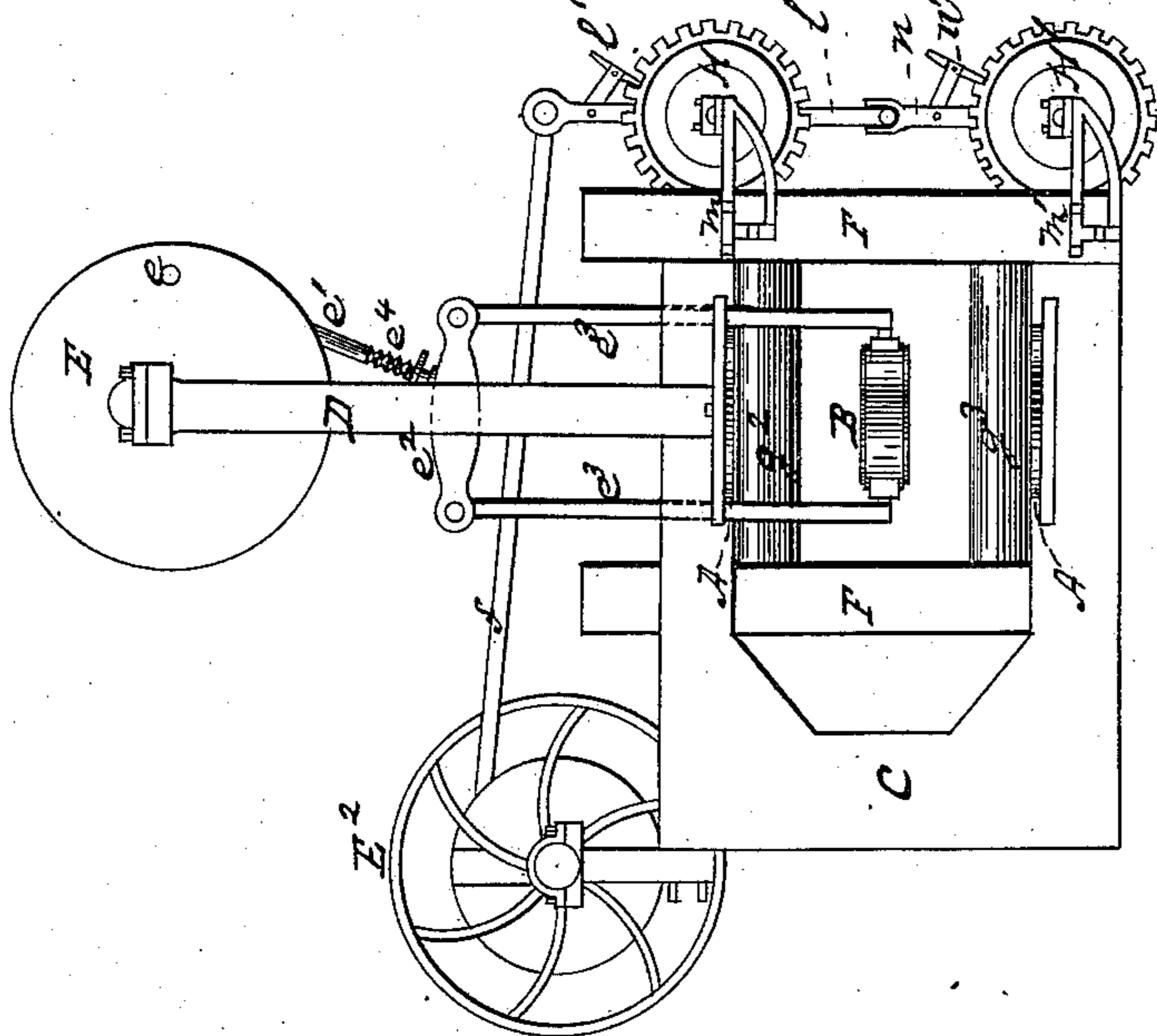
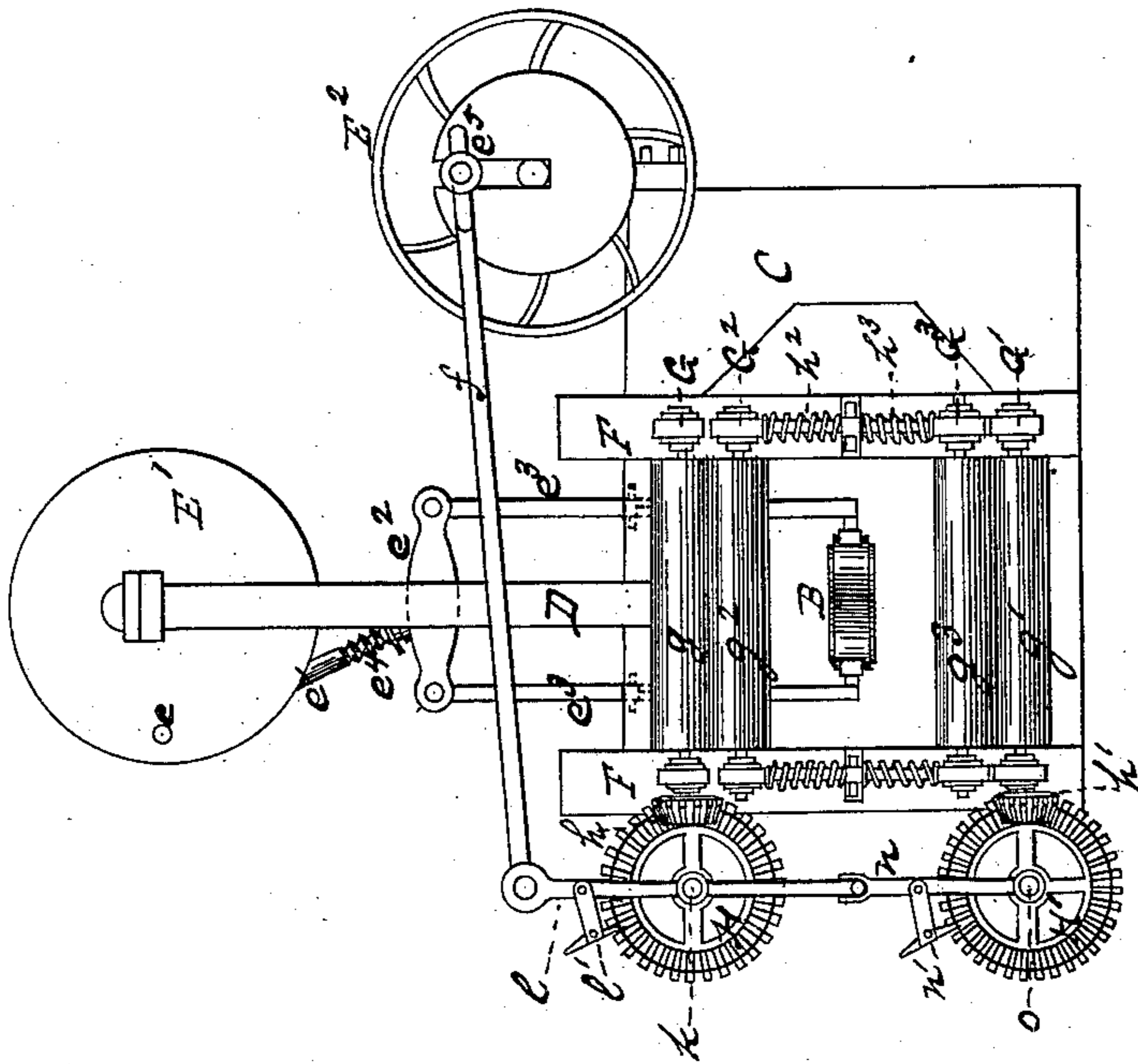


Fig. 4



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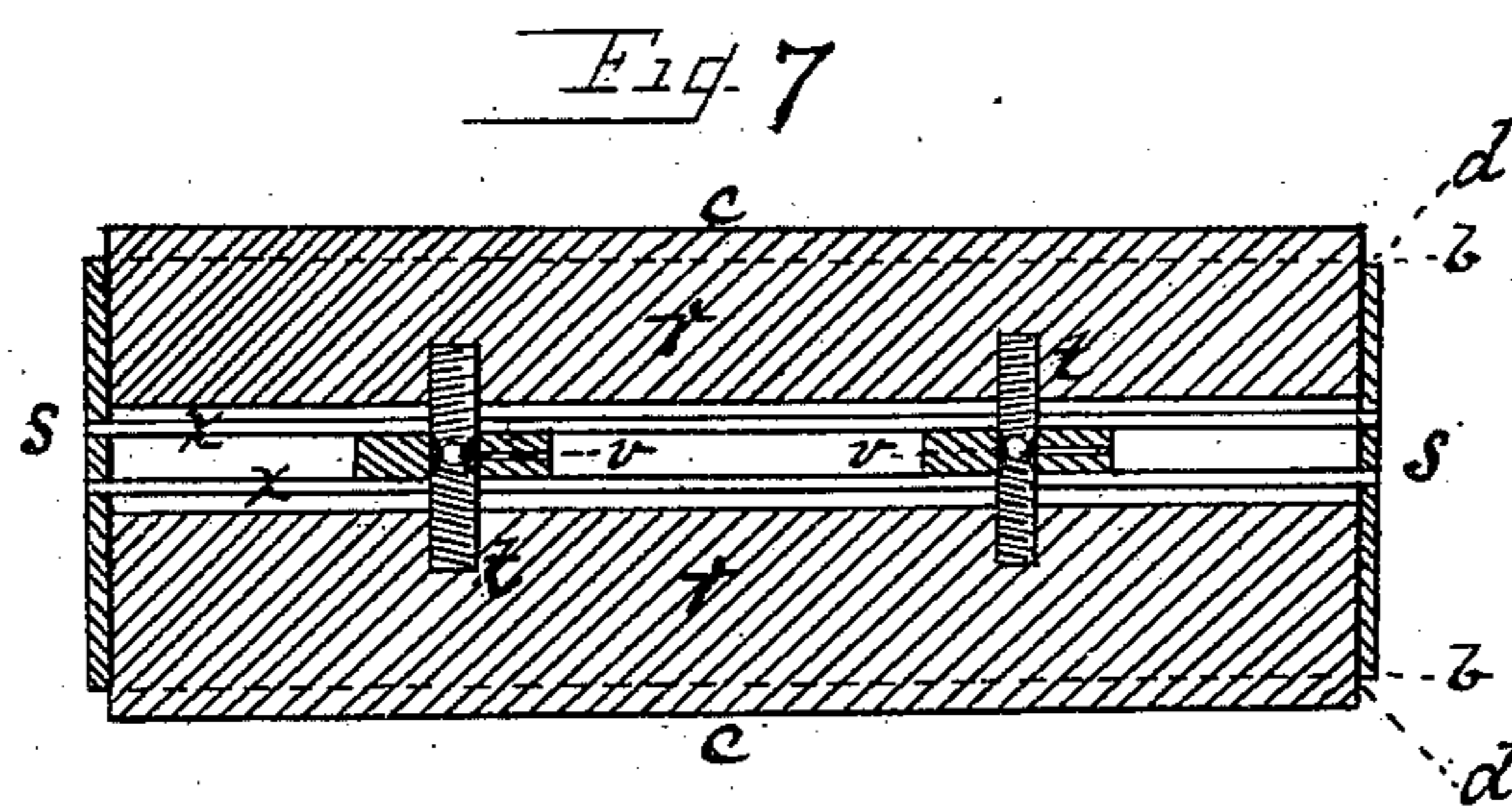
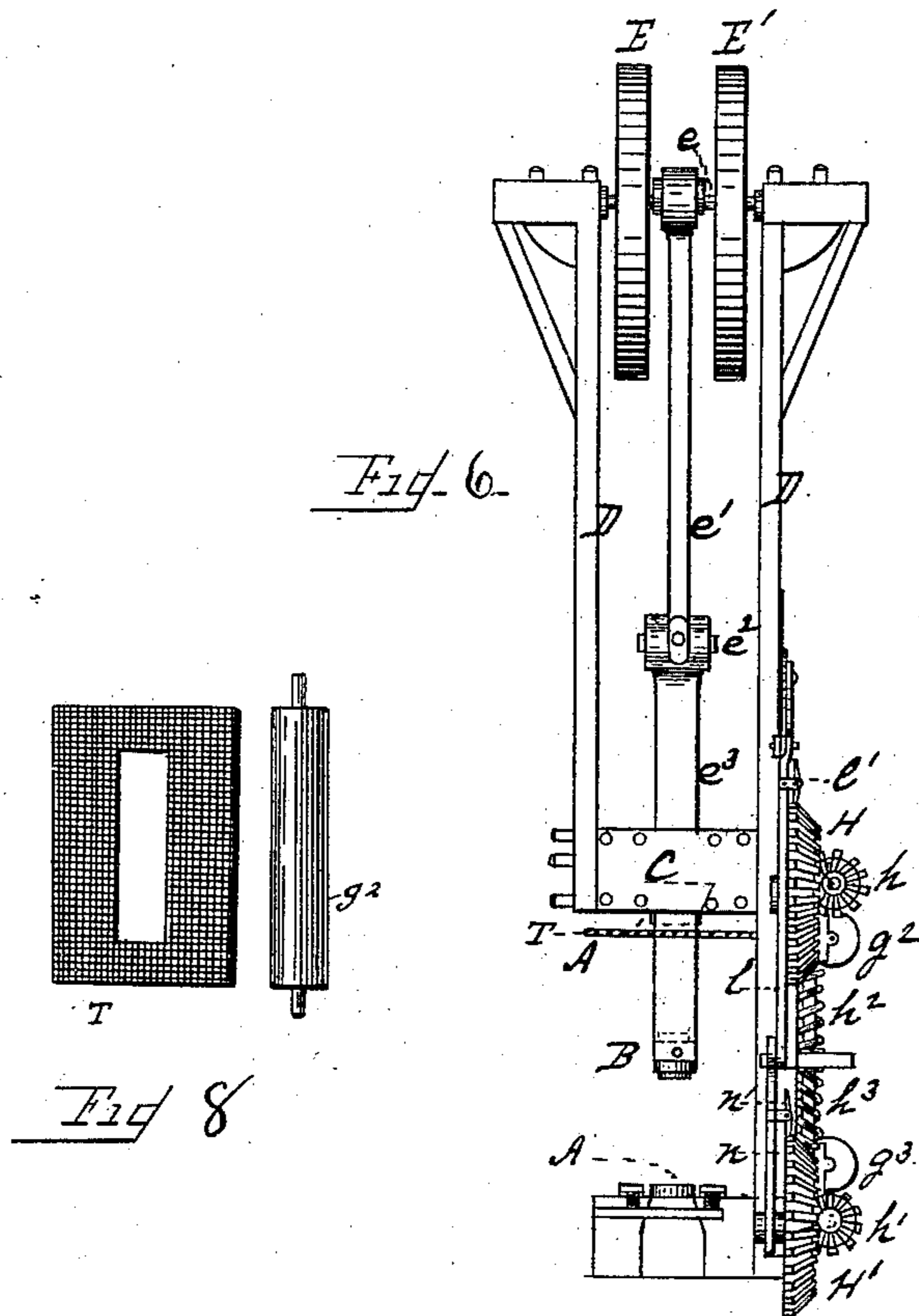
3 Sheets—Sheet 3.

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# UNITED STATES PATENT OFFICE.

JONAS PARKER AND MARK L. GUNNING, OF WILLIAMSPORT, PENNSYLVANIA, ASSIGNORS OF A PART TO GEORGE SNYDER BANGER, CHARLES ADELBERT BOWMAN, AND HARRY PARKER, ALL OF SAME PLACE.

## MACHINE FOR CUTTING AND BEVELING FLEXIBLE MATERIAL.

SPECIFICATION forming part of Letters Patent No. 357,024, dated February 1, 1887.

Application filed June 25, 1886. Serial No. 206,237. (No model.)

*To all whom it may concern:*

Be it known that we, JONAS PARKER and MARK L. GUNNING, both residing at Williamsport, in the county of Lycoming and the State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Cutting and Beveling or Scarfing the Edges of Flexible or Elastic Materials; and we hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a view of two cutters with central reciprocating die-block especially adapted for certain classes of work and for use with machinery for operating the dies. Figs. 2 and 3 are top and bottom views of the reciprocating block shown in Fig. 1. Fig. 4 is an elevation of the feed side of a machine embodying our invention. Fig. 5 is a view of the reverse side, showing the cutters and die-block; and Fig. 6 is an end view looking from the left of Fig. 4. Fig. 7 is a sectional view of the die, showing the adjustable character of its central block, whereby more or less bevel is obtained on the article cut out by the apparatus. Fig. 8 is a detached view of the wire or open feed-table to support the flexible material as it is fed to the upper cutter.

Like letters refer to like parts wherever they occur.

Our invention has for its object the providing of apparatus whereby a beveled or scarfed edge may be produced on any form, pattern, or blank of flexible, elastic, or yielding material at the time and by the same operation which cuts or strikes out said blank, and is of especial value in the manufacture of rubber goods—such as shoes, boots, &c.—in the manufacture of leather goods, as in beveling the soles of boots and shoes, or cutting billiard-tips, and in many other places in the art where rubber, leather, pasteboard, or like material is worked.

The common methods of beveling the edges of elastic and flexible material are either by pressing in a mold while damp and allowing the article to dry, when it would retain its form, which method is not applicable to the treatment of elastic material—such as rubber;

or by hand-work—viz., by first cutting or striking out the pattern or blank by suitable dies or cutters somewhat larger than the final size of the article and with a straight edge, then clamping the article by means of a die or dies of the exact size, and finally scarfing the edge of the article with a sharp knife and in the hand of a skilled workman. These methods are slow, laborious, expensive, and wasteful of material, all of which we desire to avoid; and to this end our invention consists in combining a reciprocating die-block having its opposite faces beveled or recessed at its edges with two fixed cutters, whereby complementary patterns—such as rights and lefts of soles, &c.—may be cut and beveled by one and the same die-block; also, in combining with the mechanism which reciprocates the die-block mechanism for causing an alternating feed of the material to be operated on; and, finally, in details of construction and specific combinations for effecting the purposes hereinbefore specified, all as will hereinafter more fully appear.

We will now proceed to describe our devices more specifically, so that others skilled in the art to which it appertains may apply the invention.

In the drawings, A indicates a cutter, which may be of the desired form or pattern for the article to be produced, and with the usual beveled sharpening-edge.

B indicates the die-block, which coacts with the cutter and whose shape corresponds to the interior of the cutter, and like the cutter varies with the form of the article to be produced. This die-block B has its outer or cutting edge, *b*, to coact with the cutter, and its raised face *c* of the same general form as the pattern, but of slightly less area, so as to leave a recess or bevel, *d*, over which the flexible material to be operated on will be drawn or curved, so that the cut of the cutter shall be oblique or inclined to the surface of the material and not at right angles thereto, as heretofore. These points being properly attended to, the pattern of the cutter and die-block may be varied, as before specified, to suit the shape desired.

We prefer the mechanism hereinafter de-

scribed for operating the devices, and as the invention is more especially useful in its application to the manufacture of rubber shoes and like articles, we have chosen, for purposes of illustration, a set of cutters and a die-block adapted to cutting bevel-edged soles of rubber or leather for shoes, though we do not desire or intend to be limited to that form of die-block and cutter. Therefore, in this instance the cutters A have the outline of a shoe-sole and the die-block B has the same outline as the interior of the cutter, with the characteristics before specified, and for use with mechanism we prefer to use two cutters and a single reciprocating die-block arranged between the cutters, as shown in Fig. 1 of the drawings, and operating alternately with each cutter, by which arrangement a single die-block will suffice, as its opposite faces will be right and left, while only the cutters will have to be made right and left.

The arrangement of the cutters and die-blocks in the machine will hereinafter appear.

For the support of the operative mechanism any suitable frame, of wood or other material, may be used, as at C, with suitable uprights, D D, for the band-wheels E E', and posts F for the feed-rollers. Journaled in or on the uprights D D are two band wheels or pulleys, one of which, E, may be driven by a belt from any suitable source of power, while the other, E', by means of a belt, communicates power to a third band-wheel, E<sup>2</sup>, supported on the main frame C, and which operates the feed-rollers of the machine. As the feed is to be synchronous and equal to the movement of the die-block, these three band-wheels E E' E<sup>2</sup> are preferably of equal diameter.

Secured to a wrist or crank pin, *e*, which connects the two band-wheels E E', is a pitman, *e'*, having at its lower end a pivoted cross-head, *e''*, from the opposite ends of which two rods, *e'''*, extend down through guide-openings in the frame C, and are secured to the opposite ends of the reciprocating die-block B, hereinbefore described. The connection between the pitman-rod *e'* and the cross-head *e''* may be made by a screw rod and nut or a turn-buckle, as at *e<sup>4</sup>*, so as to adjust the throw or reciprocation of the rods *e'''* and die-block B, when desired.

Immediately below and in line with the die-block B one cutter A (either right or left, according to the arrangement of the die-block B) is secured to the bed of frame C, while its fellow is secured to the upper part of C directly above and in line with the die-block, so that one blank (or sole) shall be cut at the termination of the upstroke of the reciprocating die-block B, and another at termination of the downstroke. Immediately opposite and in substantially the same planes as the cutters are the feed-rollers—two pairs, one pair for each cutter—the upper and lower rollers of which, *g g'*, are the driven rolls, and may have their journals in boxes G G' fixed on the posts F, while their shafts are each pro-

vided with a bevel-gear, *h h'*. The other or inner rollers, *g<sup>2</sup> g'<sup>2</sup>*, which should have yielding bearings to accommodate different thicknesses of material, are journaled in sliding boxes G<sup>2</sup> G<sup>3</sup>, backed by springs *h<sup>2</sup> h'<sup>2</sup>*, or, if preferred, counterweighted in manner well known to the skilled mechanic.

The preferred mechanism for so actuating the feed-rollers that the pairs shall feed alternately is as follows: On the band-wheel E<sup>2</sup>, before referred to as driven from the band-wheel E', which operates the reciprocating die B, is a wrist-pin, *e<sup>5</sup>*, adjustable in a radial slot, so that the pitman connected with said wrist-pin can have its throw varied to suit the throw of pitman-rod *e'*, and thus regulate the feed by the movement of die B. From this wrist or crank pin *e<sup>5</sup>* a rod, *f*, extends to one end of a lever or arm, *l*, secured to a shaft, *k*, journaled in brackets *m* on the frame C, while the lower end of said lever *l* terminates midway between the fixed rollers *g g'* in a ball which enters a cup on the upper end of a second lever, *n*, which lever *n* is secured to a shaft, *o*, journaled in brackets *m'* on the frame C opposite the lower fixed roller. By this construction it will be noted that the two levers *l* and *n* and their shafts are vibrated simultaneously in opposite directions.

Journaled loosely on the shafts *k* and *o* of the levers *l* and *n* are beveled wheels H and H', which mesh with the bevel-pinions *h h'* of the rollers *g g'*, and pivoted on the levers *l n* are the pawls or dogs *l' n'*, which engage with the cog or ratchet teeth in the peripheries of the bevel-pinions H H', thus forming two sets of pawl-and-ratchet mechanism, which move the bevel-pinions H H', and consequently the rollers *g g'* alternately, so that the material above and below the reciprocating die-block is alternately and successively fed forward over its respective cutter until the sheets are entirely used up or cut into blanks. Below the upper die is a wire or open feed-table, T, to support the flexible material as it is fed to the upper cutter, and surrounding the lower cutter is a spring clearing-plate, which lifts and frees the sheet after the blank is cut therefrom.

As it is desirable at times to increase or decrease the scarf or bevel on the edge of the blank, (or sole,) we provide means therefor by constructing the die-block B as shown in Fig. 7—that is to say, with an outer shell, S, on which is the cutting-edge *b*, the shell being sufficiently thick to form the recess *d*. Within the shell S are two movable face-blocks, *r*, to form the two raised faces *c*, and said blocks are connected by two or more screws, *t*, each having a right and a left hand thread and an eye, V, for a wrench-pin, by which the screws *t* may be turned to cause the simultaneous advance or recession of the die-faces *c*. The shell may be provided with cross-braces *x x*, between which the central swells or heads of the screws *t* are placed, so as to prevent the displacement of the movable face-blocks *r*.

The devices, being constructed substantially as specified, will operate as follows: Power being applied to rotate the band-wheels  $E$   $E'$  and communicated to band-wheel  $E^2$ , and the pitman  $e'$  and rod  $f$  having been adjusted to cause the die-block and the feed-rolls to move at the proper relative speeds, the flexible material is fed forward, first one sheet and then the other, alternately, step by step, each over its respective cutter, and each in its turn is forced by the reciprocating die-block down on (or up against) the cutter, the material curving or bending over the raised face  $c$  of the die-block  $B$  so as to present an inclined surface to the cutter-edge and cause the cut to be oblique to the face of the material, so that the blank is severed from the material with a scarfing cut and delivered from the machine cut to form and with the desired scarfed or beveled edge, and this without undue strain on or distortion of the material.

We are aware that a cutting-die and a plugger having a portion of its face beveled or bulged outwardly have heretofore been devised for cutting elastic forms having beveled edges, and do not herein claim the same; but,

Having thus described the nature, operation, and advantages of our invention, what we claim, and desire to secure by Letters Patent, is—

1. In apparatus for cutting and beveling articles of flexible elastic material, a cutter-block comprising an outer shell provided with a cutting-edge and an adjustable central face-block which projects above the shell, substantially as and for the purposes specified.

2. In a machine for cutting blank forms, the combination, with an upper and lower cutter whose forms are complementary, of a single reciprocating die-block whose opposite faces coact with said cutters, and means for reciprocating said die-block, substantially as and for the purposes specified.

3. In a machine for cutting blank forms, the combination of two cutters, each having

its own pair of feed-rolls, an intermediate reciprocating die-block which coacts with both cutters, and intermediate gearing, substantially as specified, whereby the feed-rollers are actuated alternately and successively by the reciprocating die-block mechanism, substantially as and for the purposes specified.

4. In apparatus for cutting blank forms, the combination, with two cutters, of two sets of feed-rollers, one roller of each pair having yielding bearings, an interposed reciprocating die-block which coacts with both cutters, and intermediate mechanism, substantially as specified, for driving the fixed feed-rollers from the mechanism which actuates the reciprocating die-block, substantially as and for the purposes specified.

5. In apparatus for cutting blank forms, the combination of two band-wheels, a reciprocating die-block operated therefrom, a third band-wheel driven from one of the first-named band-wheels, two bevel-wheels operated from the third band-wheel by pawl-and-ratchet mechanism, two pairs of feed-rollers operated alternately by the bevel-pinions, and two sets of cutters arranged in the planes of the feed-rollers, substantially as and for the purposes specified.

6. In apparatus for cutting blank forms, the combination of the band-wheels  $E$   $E'$ , pitman  $e'$ , cross-head  $e^2$ , rods  $e^3$ , and reciprocating die-block  $B$ , with the band-wheel  $E^2$ , rod  $f$ , rock-levers  $l$   $n$ , having pawls  $l'$   $n'$ , bevel-pinions  $H$   $H'$ , rollers having bevel-pinions  $h$   $h'$ , and with two cutters,  $A$ , arranged above and below the reciprocating die-block  $B$ , the whole coacting substantially as and for the purposes specified.

In testimony whereof we affix our signatures, in presence of two witnesses, this 25th day of June, 1886.

JONAS PARKER.  
MARK L. GUNNING.

Witnesses:

F. W. RITTER, Jr.,  
S. A. TERRY.