(No Model.)

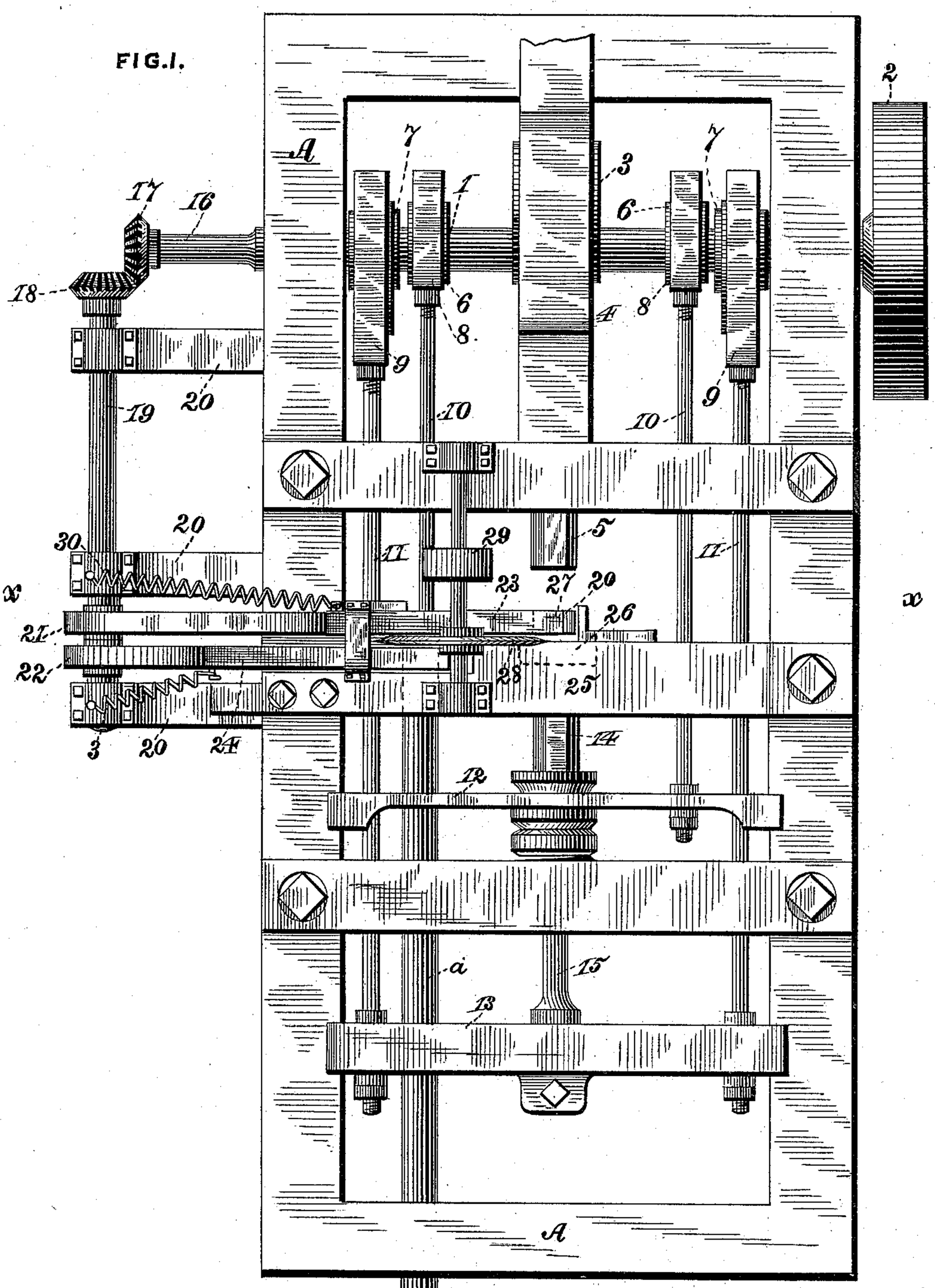
2 Sheets—Sheet 1.

F. LACKNER.

NUT MACHINE.

No. 385,188. Patented June 26, 1888.

FIG. 1.



WITNESSES:

H. C. Gaither.

R. A. Whittlesey.

INVENTOR,

Frederick Lackner.

Damm & Wolcott, Att'y.

(No Model.)

2 Sheets—Sheet 2.

F. LACKNER.

NUT MACHINE.

No. 385,188. Patented June 26, 1888.

FIG. 2.

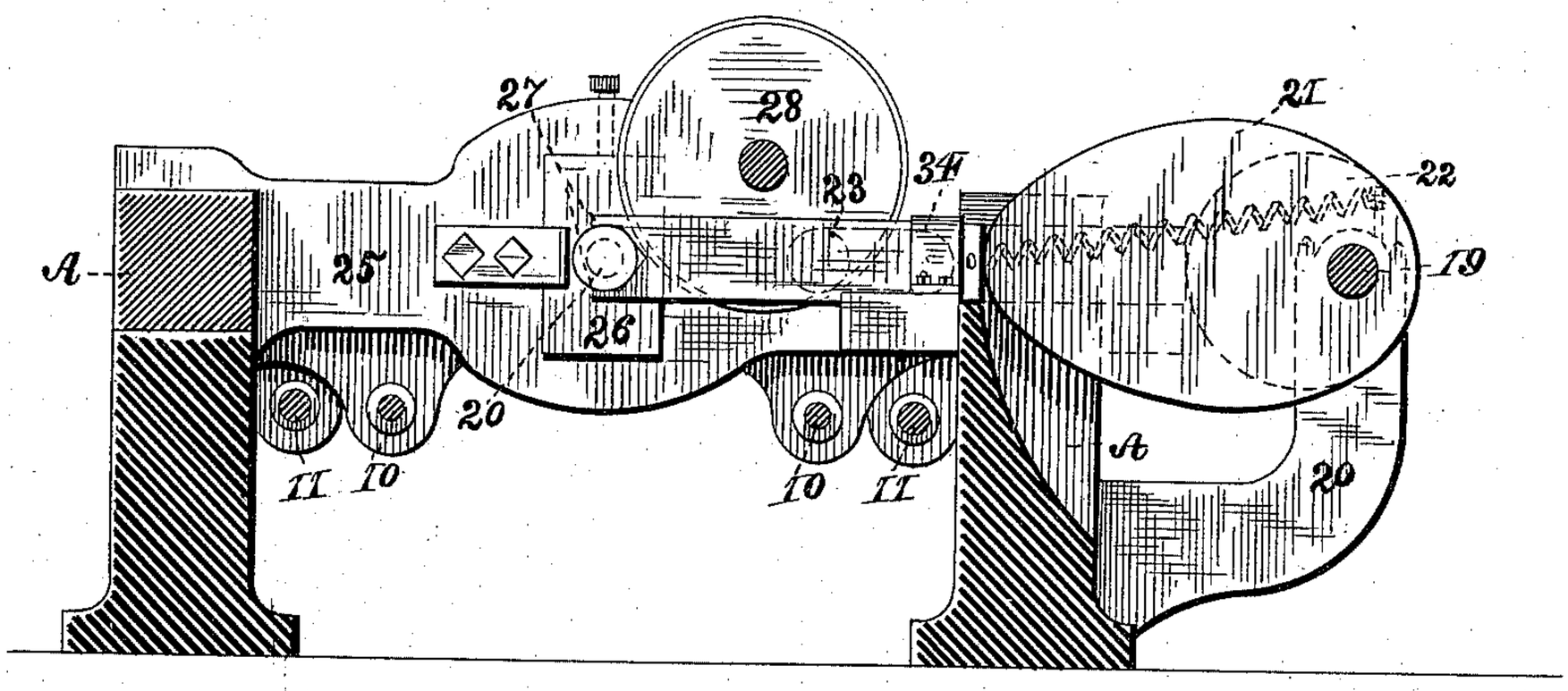
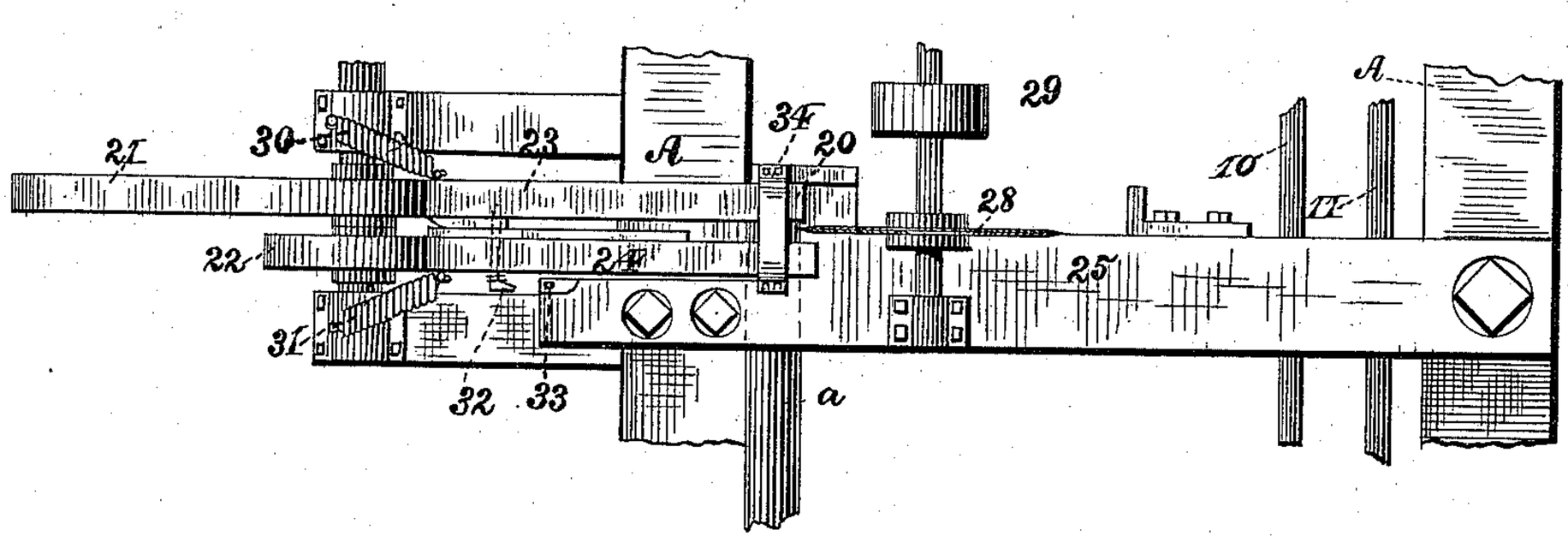


FIG. 3.



WITNESSES:
F. E. Gaither.
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UNITED STATES PATENT OFFICE.

FREDERICK LACKNER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THOMAS NEELY, EDWIN BINDLEY, AND JOHN BINDLEY, ALL OF SAME PLACE.

NUT-MACHINE.

SPECIFICATION forming part of Letters Patent No. 385,188, dated June 26, 1888.

Application filed March 22, 1887. Renewed May 7, 1888. Serial No. 273,125. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK LACKNER, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Nut-Machines, of which improvements the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a top plan view of a machine for forming polygonal nuts. Fig. 2 is a transverse section of the same on the line *x x*, Fig. 1. Fig. 3 is a plan view of a portion of the machine, showing a modified construction of the slides.

One of the methods heretofore employed in the manufacture of polygonal nuts consisted in cutting a short section from a polygonal or round rod by a transverse-operating cutter, transferring the blank so cut to a die-box or matrix, and then causing the blank to expand laterally and fill the die-box under the conjoint action of oppositely-moving dies and a perforating-punch.

In practicing the above-described method the blank is always so distorted by the action of the cutter that the compressing-dies and perforating-punch are subjected to great strains in causing the metal to expand or flow so as to fill the matrix, and as the distortion increases in proportion as the length of the severed section or blank decreases, and as greater pressure is required to cause a short and greatly-distorted blank to expand sufficiently to fill the matrix, it is practically impossible to manufacture comparatively thin polygonal nuts in the manner above referred to.

The object of the invention herein is to provide for the cutting or sectioning of a polygonal or round bar and the transfer of the blanks or sections 20, formed into line with the shaping and perforating devices, without any distortion of the blank by the cutting and transferring devices above mentioned; and to this end the invention consists in the construction and combination of parts substantially as hereinafter described and claimed.

At one end of the frame A is mounted the power-shaft 1, having the driving-pulley 2 secured thereto, and on the shaft is mounted the eccentric 3, connected by the yoke 4 to the compressing-die 5, the eccentrics 6 and 7 having their yokes 8 and 9 connected by the rods 10 and 11 to the slides 12 and 13, carrying the compressing-die 14 and the perforating-punch 15.

The parts above mentioned are constructed and arranged substantially as set forth in Letters Patent No. 326,762, granted September 22, 1885, to Alfred Marland.

On one end of the power-shaft 1 is formed or secured an extension, 16, having the bevel-pinion 17 attached thereto, said pinion intermeshing with a corresponding pinion, 18, on the counter-shaft 19, mounted in suitable bearings on the brackets 20, projecting from the side of the frame A. On the counter-shaft 19 are mounted the cams 21 and 22, arranged to operate on the slides 23 and 24, mounted in suitable ways in the transverse beam 25, in which the block 26, provided with the nut-forming matrix, is secured. The slide 23 is so arranged that its line of movement is immediately in front of the nut-forming matrix, and is provided at its front end with forks 27, for carrying the blank. The slide 24 is arranged in the rear of the slide 23, and at a distance therefrom a little greater than the width of the saw 28, and is provided at its forward end with an opening a little larger than the bar from which the blanks are to be cut. The shaft of the saw 28, above referred to, is mounted in bearings formed on supports preferably independent of the frame A, although such bearings may be formed in or secured to the frame, the saw being driven, through the medium of the pulley 29, from any suitable source of power. This saw, as above stated, is located between the slides 23 and 24, and between the line of feed of the bar from which the blanks are to be cut and the nut-forming matrix.

Through the transverse beam 25 is formed a horizontal slot for the feed of the bar across the edge of the saw, said slot being of a length equal to the stroke of the slide 24, and lying partially in front of the saw-edge and partially within the perimeter of the saw, as clearly indicated by dotted lines in Figs. 1 and 2. The cams 21 and 22, operating the slides 23 and 24,

are constructed so as to impart a simultaneous and comparatively slow movement to the slides from the beginning of their forward stroke until the bar has been cut, at which point the forward movement of the slide 24 ceases, and the slide 23 is moved onward with comparative rapidity until the blank held between its forks 27 is in line with the nut-forming matrix. Both slides are then drawn back by the springs 30 and 31.

In lieu of the two cams 21 and 22, the cam 21 may be used alone for operating both slides, in which case I provide a spring-actuating bolt, 32, (see Fig. 3,) for locking the slides together during their simultaneous forward movement, said bolt being withdrawn from engagement with the slide 23 by the finger 33 as soon as the bar has been severed, at which time the slide 24 is free to be retracted by the spring 31. The two slides are again locked together on the return of the slide 23 to its normal position.

In operating my improved machine, the slides 23 and 24 being at the rearward limit of their movement, as shown in Fig. 3, the bar *a*, being properly heated, is fed through the slot in the beam 25, the slot in the slide 24, and the forks 27 in the slide 23, against the stop 34. The slides 23 and 24 are then moved forward together by one or both of the cams, carrying with them the bar *a* against the edge of the rotary saw. The rapidity of movement of the slides is regulated in accordance with the rapidity of the action of the saw in cutting through the bar. After the blank has been severed from the bar the slide 23 is moved rapidly forward until the blank held in the forks 27 is in line with the nut-forming matrix, when the compressing-dies and the perforating-punch are brought into action, as clearly described in applications A and B, of even date herewith. It is essential that the slides should move together during the sawing operation, in order that the bar may be presented squarely to the saw and avoid any twisting or binding of the bar upon the saw.

In order to prevent the blank from being displaced from the forks of the slide by the saw, the forks are made elastic, the distance between them being a little less than the diameter of the bar, so that the forks take a yielding hold on the blank.

As the saw will pass easily through the bar, there will not be any distortion of the blank, and hence blanks may be cut from bars having approximately the shape and size in cross-section of the finished nut, thereby avoiding the necessity of great compression, and also permitting of the formation of their nuts.

I claim herein as my invention—

1. In a machine for forming polygonal nuts, the combination of nut-shaping mechanism, consisting of a matrix, compressing-die, and a perforating-punch, a saw, and mechanism for feeding the bar to the saw and the severed blank to the nut-shaping mechanism, substantially as set forth.

2. In a machine for forming polygonal nuts, the combination of nut-shaping mechanism, consisting of a matrix, compressing-dies, and a perforating-punch, a saw, and slides for feeding the bar to the saw and the severed blank to the nut-shaping mechanism, substantially as set forth.

3. In a machine for forming polygonal nuts, the combination of nut-shaping mechanism, consisting of a matrix, compressing-dies, and a perforating-punch, and a saw for dividing a bar into sections or blanks for subsequent shaping by the nut-shaping mechanism, substantially as set forth.

In testimony whereof I have hereunto set my hand.

FREDERICK LACKNER.

Witnesses:
DARWIN S. WOLCOTT,
R. H. WHITTLESEY.