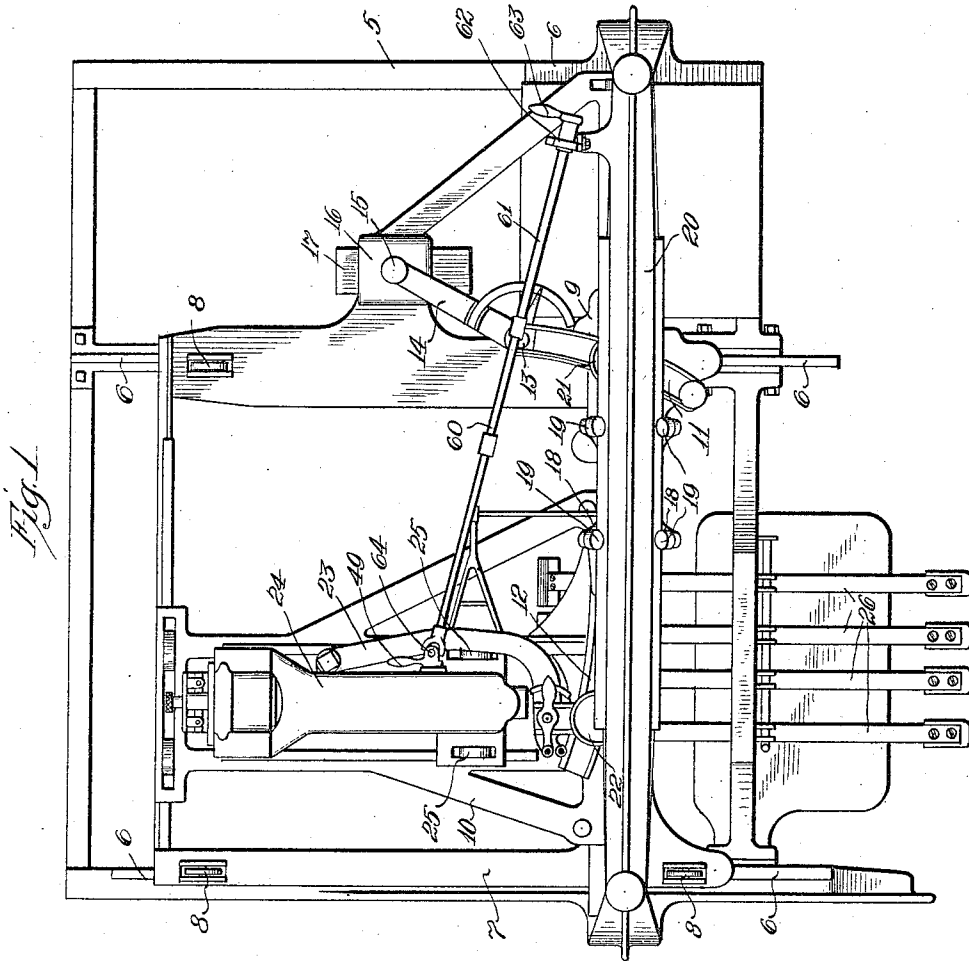


H. NOEL.
PATTERN CUTTING MACHINE.
APPLICATION FILED OCT. 26, 1912.

1,060,279.

Patented Apr. 29, 1913.

2 SHEETS—SHEET 1.



Witnesses:
Geo. L. Luger
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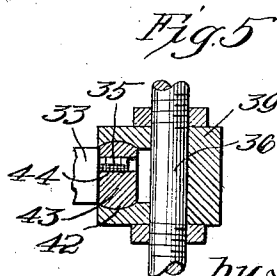
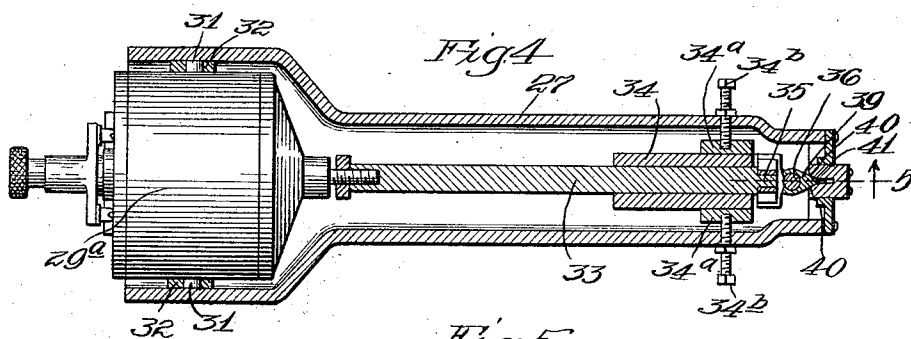
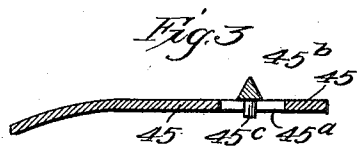
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Atty

1,060,279.

2 SHEETS—SHEET 2.



By Ipswich, Lee, Christon ^{and} Miles

Att'y

UNITED STATES PATENT OFFICE.

HAL NOEL, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES E. REED & COMPANY, OF CHICAGO, ILLINOIS.

PATTERN-CUTTING MACHINE.

1,060,279.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed October 26, 1912. Serial No. 727,893.

To all whom it may concern:

Be it known that I, HAL NOEL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Pattern-Cutting Machines, of which the following is a specification.

My invention relates to pattern-cutting machines for making shoe-patterns and more particularly to the general type forming the subject of United States Reissued Letters Patent No. 11,569, granted to C. E. Reed September 29, 1896, and employing a pantographic frame equipped with a model-tracing element and a pattern-cutting element, the latter in the form of a power-driven punch coöperating with a relatively stationary die.

It is desirable in pattern-cutting mechanism of this type as employed in pattern-cutting machines, to provide for the adjustment of one of the members of the die and punch mechanism relative to the other thereof for adjusting these elements into and out of operative position relative to each other, in order that during the cutting of a pattern, which often requires frequent interruptions in the cutting operation, the movable element of the die and punch mechanism may continue its movement, but idly, during such interruptions.

My object is to provide improved means, in machines of the type above referred to, for permitting the movement of the adjustable element of the punch and die mechanism relative to the other element thereof, into and out of operative position, which shall be simple and economical of construction, shall operate smoothly, and by which wear of the parts thereof shall be reduced to the minimum.

Referring to the accompanying drawings—Figure 1 is a plan view of a shoe-pattern cutting-machine of the general type above referred to and equipped with my improvement. Fig. 2 is a view in side elevation of the pattern-cutting element of the machine, the driving means therefor, and the means for supporting it in operative position on the machine, certain parts thereof being shown in section. Fig. 3 is an enlarged broken longitudinal section taken through a spring forming a part of the mechanism illustrated in Fig. 2. Fig. 4 is a section taken at the line 4 on Fig. 2 and

viewed in the direction of the arrow; and Fig. 5, a section taken at the line 5 on Fig. 4 and viewed in the direction of the arrow.

As the machine illustrated, and to which my improvement is applied, is of a form commonly known in the art, the general following description of the machine will suffice.

The frame of the machine is represented at 5 and is provided with roller-engaging guide-surfaces 6. A frame 7 surmounts the frame 5 and is provided with rollers 8 at which it is movable back and forth on the guides 6. Surmounting the frame 7 and adapted to be freely moved back and forth to the right and left in Fig. 1 are frames 9 and 10. Pivotaly supported on the frames 9 and 10 are grading levers 11 and 12, the rear end of the lever 11 being pivotaly connected, as indicated at 13, with a connecting-bar 14, pivoted as indicated at 15, on a block 16, slidable back and forth on a slide 17 on the frame 7, and the lever 12 being pivotaly connected at its right-hand end in Fig. 1, through the medium of mechanism, not shown, with a carriage 18, guidedly confined at rollers 19 on a stationary guide-bar 20 extending transversely of the machine. The levers 11 and 12 are provided with clamping-heads 21 and 22, illustrated diagrammatically, which are adjustable along the respective grading-levers and, in practice, are provided with means for maintaining them in adjusted position. The head 21 connects with the frame 10 through the medium of mechanism, not shown, and the head 22 is connected through the medium of an arm 23 with a frame 24, forming a cutter-head, guidedly supported at rollers 25 to be moved back and forth on the frame 10, the frame 24 carrying the pattern-cutting elements adapted to cut the pattern from a blank (not shown), which would be held by the clamp 26, and the model-tracing element, not shown, being supported on the frame 9. The frame 24 is in the form of a yoke composed of sections 27 and 28, united at their rear ends, but spaced apart at their front ends, as illustrated in Fig. 2, the section 27 being in the form of a housing.

In accordance with my present invention, the power-device for actuating the reciprocating punch, represented at 29, for coöperation with a die 30 carried by the yoke-section 28, is shown at 29^a and is pivotaly

mounted, as indicated at 31, on a depending yoke-member 32 secured to the yoke-section 27, to permit the motor 29^a and the parts operated thereby to be rocked upon the pivots 31 as a fulcrum. The drive-shaft of the motor 29^a represented at 33 is shown as journaled in a head 34, which latter extends between guide-plates 34^a secured to the walls of the housing 27 by adjustable screws 34^b, and is adapted to be raised and lowered for likewise rocking the motor and with it the shaft 33 on the pins 31 by means hereinafter described, the head 34 having slight movement longitudinally of the shaft 33, whereby when the head 34 is raised and lowered, as hereinafter described, this head will not bind on the shaft 33. The outer end of the shaft 33 is equipped with a pin 35 arranged eccentric to the axis about which the shaft 33 rotates, and the punch 29 is provided on the lower end of a rod 36 which is slidably confined at its upper and lower ends in bearings 37 and 38 in the forward end of the yoke-section 27, the rod 36 being equipped with a head 39 having a double beveled surface 40 and containing a transversely-extending opening 42, circular in cross-section, forming guides for a cross-head 43, likewise circular in cross-section, containing an opening 44 into which the eccentric pin 35, on the shaft 33, extends for reciprocating the punch 29, the head 39 at its surfaces 40 sliding against a guide 41 on the interior of the yoke-section 27.

It will thus be understood from the foregoing, that when the shaft 33 is rotated, it will cause the cross-head 43 to reciprocate horizontally in the guides 42 and in such action reciprocate up and down with the result of reciprocating the head 39, rod 36, and punch 29, relative to the die 30.

In order that the punch 29 may be moved into and out of position for entering the die 30 during the reciprocations of the punch for cutting the pattern, I provide means for bodily swinging the motor on the pivots 31 to depress the right-hand of the shaft 33 and the parts connected therewith, from the position illustrated in Fig. 2, the following being a description of the preferred illustrated mechanism for this purpose: Journaled in a depending boss 47 in the yoke-section 27 is a disk 48 connected with a lever 49 exterior of the housing 27 and carrying on its opposite face on the interior of the housing 27 an eccentric pin 50 pivotally connected with one end of a lever 51, the opposite end of said lever being pivotally connected, as indicated at 52, with the joint of a toggle lever formed of sections 53 and 54, the section 53 being pivotally connected, as indicated at 55, with the top of the housing 27 and the section 54 being pivotally connected, as indicated at 56, with the forward end of the block 34, the latter being

pivotally connected at its rear end, as indicated at 57, with the forward end of a link 58, the rear end of which is pivotally connected with the housing 27, as represented at 59.

It will be readily understood from the foregoing that when the operator swings the lever 49 upward in Fig. 1, for turning the disk 48 to the right in Fig. 2, the toggle will be straightened out and moved a slight distance beyond dead center, thereby forcing the head 34 downwardly with the result of rocking the motor 29^a on the pivots 31 and depressing the punch 29 into position for entering the die 30 in the reciprocations of the punch 29.

In order that the punch 29 may be moved into and out of operative position, as hereinbefore stated, from different points on the machine, I provide a handle-equipped shaft formed of telescoping sections 60 and 61, the section 61 being journaled on a lug 62 on the bar 20 and being provided with a handle 63, and the section 60 being operatively connected with the disk 48 through the medium of a universal joint 64, whereby the operator by turning the handle 63 may turn the disk 48 in a corresponding direction and thus actuate the toggle formed of the levers 53 and 54 for the purpose hereinbefore stated.

To provide against undue vibration of the mechanism under the action of the rotating shaft 33, I provide a spring 45 which lies within the housing 27 and is secured at one end thereto and extends at its free end beneath the head 34 whereat it is slotted as indicated by 45^a. The underside of the block contains a groove 34^c of inverted V-shape in cross-section into which a head 45^b of V-shape in cross-section carried by a stem 45^c located in the slot 45^a, extends and bears against the bottom of the groove 34^c. By slidably confining the head 45^b on the spring 45 the head is confined at all times, during the raising and lowering of the shaft 33 and block 34, in engagement at its apex with the apex of the groove 34^c and thus directing the force of the spring against the block at all times in line with the pivot 56, with the result of avoiding tendency to bind the shaft 33 in the bearing-head 34.

It will be manifest that by mounting the motor to swing for raising and lowering the punch for the purpose stated, the shaft of the motor 29^a may be made solid as distinguished from forming it in sections universally, or otherwise similarly connected together, and thus the mechanism not only runs smoothly, but is simple of construction and economical of manufacture.

What I claim as new and desire to secure by Letters Patent is—

1. In a machine of the character set forth, the combination of a member against which

the material to be cut bears in the cutting operation, a reciprocatory cutter-device, a motor pivotally supported to permit its shaft to be moved toward and away from said member, with its shaft extending at an angle to said cutter-device, and means for actuating said cutter-device from said motor-shaft.

2. In a machine of the character set forth, the combination of a member against which the material to be cut bears in the cutting operation, a reciprocatory cutter-device, a motor pivotally supported to permit its shaft to be moved toward and away from said member, with its shaft extending at an angle to said cutter-device, and means for bodily supporting and actuating said cutter-device from said motor shaft.

3. In a machine of the character set forth, the combination of a support for the material to be cut, cooperating relatively movable die and punch members, said die being on said support, a motor pivotally supported to permit its shaft to be moved toward and away from said die member with its shaft extending at an angle to said punch-member, and means for actuating said punch-member from said motor-shaft.

4. In a machine of the character set forth, the combination of a support for the material to be cut and carrying a die-member, a punch-member reciprocable on said support, a motor pivoted on said supporting member to permit its shaft to be moved toward and away from said die-member with its shaft extending at an angle to said punch-member, and means for actuating said punch-member from said motor shaft.

5. In a machine of the character set forth, the combination of a member against which the material to be cut bears in the cutting operation, a reciprocably guided cutter-device, a motor pivotally supported to permit its shaft to be moved toward and away from said member, and means actuated by the shaft of said motor for reciprocating said cutter-device.

6. In a machine of the character set forth, the combination of a support for the material to be cut, a motor pivotally supported on an axis transverse to the axis of rotation of the shaft of said motor and substantially parallel to said support, a reciprocatory cutter-device, and means on the motor-shaft for actuating said cutter-device.

7. In a machine of the character set forth, the combination of a support for the material to be cut, a motor pivotally supported on an axis transverse to the axis of rotation of the shaft of said motor and substantially parallel to said support, a reciprocatory cutter-device supported bodily by said shaft, and means on the motor shaft for actuating said cutter-device.

8. In a machine of the character set forth,

the combination of a support for the material to be cut, cooperating relatively-movable die and punch members, the relatively stationary one of which being on said support, a motor pivotally supported to permit its shaft to be moved toward and away from said support, and means for actuating the movable one of said members from the shaft of said motor.

9. In a machine of the character set forth, the combination of a support for the material to be cut, cooperating relatively-movable die and punch members, the relatively stationary one of which being on said support, a motor pivotally supported to permit its shaft to be moved toward and away from said support, and means for supporting from the motor-shaft and actuating therefrom the movable one of said members, for the purpose set forth.

10. In a machine of the character set forth, the combination of a driven shaft, a bearing for said shaft, a link pivoted at one end on the machine and at its opposite end to said bearing, means for raising and lowering said shaft, a cutter-device, and means actuated by said shaft for operating said cutter-device.

11. In a machine of the character set forth, the combination of a driven shaft, a bearing for said shaft, a link pivoted at one end on the machine and pivoted at its opposite end to said bearing, means connected with said bearing for raising and lowering it, a cutter-device, and means actuated by said shaft for actuating said cutter-device.

12. In a machine of the character set forth, the combination of a driven shaft, a bearing for said shaft, a link pivoted at one end on the machine and pivoted at its opposite end to said bearing, a toggle lever and actuating means therefor secured to the machine and to said bearing for raising and lowering the latter, a cutter-device, and means actuated by said shaft for operating said cutter-device.

13. In a machine of the character set forth, the combination of a pivotally supported motor, a cutter-device, means actuated by the shaft of said motor for actuating said cutter-device, a bearing for the shaft, a link pivoted at one end on the machine and pivoted at its opposite end to said bearing, and means for raising and lowering said bearing to rock said motor and shaft on its pivot, for the purpose set forth.

14. In a machine of the character set forth, the combination of a driven shaft, a cutter-device, means actuated by said shaft for actuating said cutter-device, a bearing for said shaft, means for raising and lowering the end of the shaft provided with the actuating means for said cutter-device, and with it said bearing, a spring, a member

movable relative to said spring and bearing under the action of the latter against said bearing, and means for preventing said member from shifting lengthwise of said bearing, whereby the force of said spring is exerted against said bearing at a non-varying point.

15. In a machine of the character set forth, the combination of a driven shaft, a cutter-device, means actuated by said shaft for actuating said cutter-device, a bearing for said shaft containing a recess, means for raising and lowering the end of the shaft provided with the actuating means for said cutter-device, and with it said bearing, a spring, and a member movable relative to said spring against the base of said recess, whereby the force of said spring is exerted against said bearing at a non-varying point.

16. In a machine of the character set forth, the combination of a driven shaft, a cutter-device, means actuated by said shaft for actuating said cutter-device, a bearing for said shaft containing a V-shaped recess extending transversely of the axis of said shaft, means for raising and lowering the end of the shaft provided with the actuating means for said cutter-device, and with it said bearing, a spring, and a member of V-shape in cross-section movable relative to said spring and bearing at its apex under the action of said spring against the base of said recess, whereby the force of said spring is exerted against said bearing at a non-varying point.

17. In a machine of the character set forth, the combination of a driven shaft, a cutter-device, means actuated by said shaft for actuating said cutter-device, a bearing for said shaft, means connected with said bearing for raising and lowering the latter and with it the end of the shaft provided with the actuating means for said cutter-device, a spring, a member movable relative

to said spring and bearing under the action of the latter against said bearing at a point directly opposing the point of connection therewith of said means for raising and lowering said bearing, and means for preventing said member from shifting lengthwise of said bearing, whereby the force of said spring is exerted against said bearing at a non-varying point, for the purpose set forth.

18. In a machine of the character set forth, the combination of a driven shaft, a cutter-device, means actuated by said shaft for actuating said cutter-device, a bearing for said shaft, a link pivoted at one end on the machine and pivoted at its opposite end to said bearing, means on the machine and connected with said bearing for raising and lowering the latter, and with it the end of the shaft, provided with actuating means for said cutter-device, a spring, a member movable relative to said spring and bearing under the action of the latter against said bearing at the side thereof opposite to that at which the means for raising and lowering said bearing are connected with the latter and directly opposing said last referred to means, and means for preventing said member from shifting lengthwise of said bearing, whereby the force of said spring is exerted against said bearing at a non-varying point, for the purpose set forth.

19. In a machine of the character set forth, the combination of a member against which the material to be cut bears in the cutting operation, a motor pivotally supported to permit its shaft to be moved toward and away from said support, a cutter-device extending at an angle to said motor-shaft, and means actuated by said motor shaft for operating said cutter-device.

HAL NOEL.

In presence of—
A. C. FISCHER,
O. C. AVISUS.