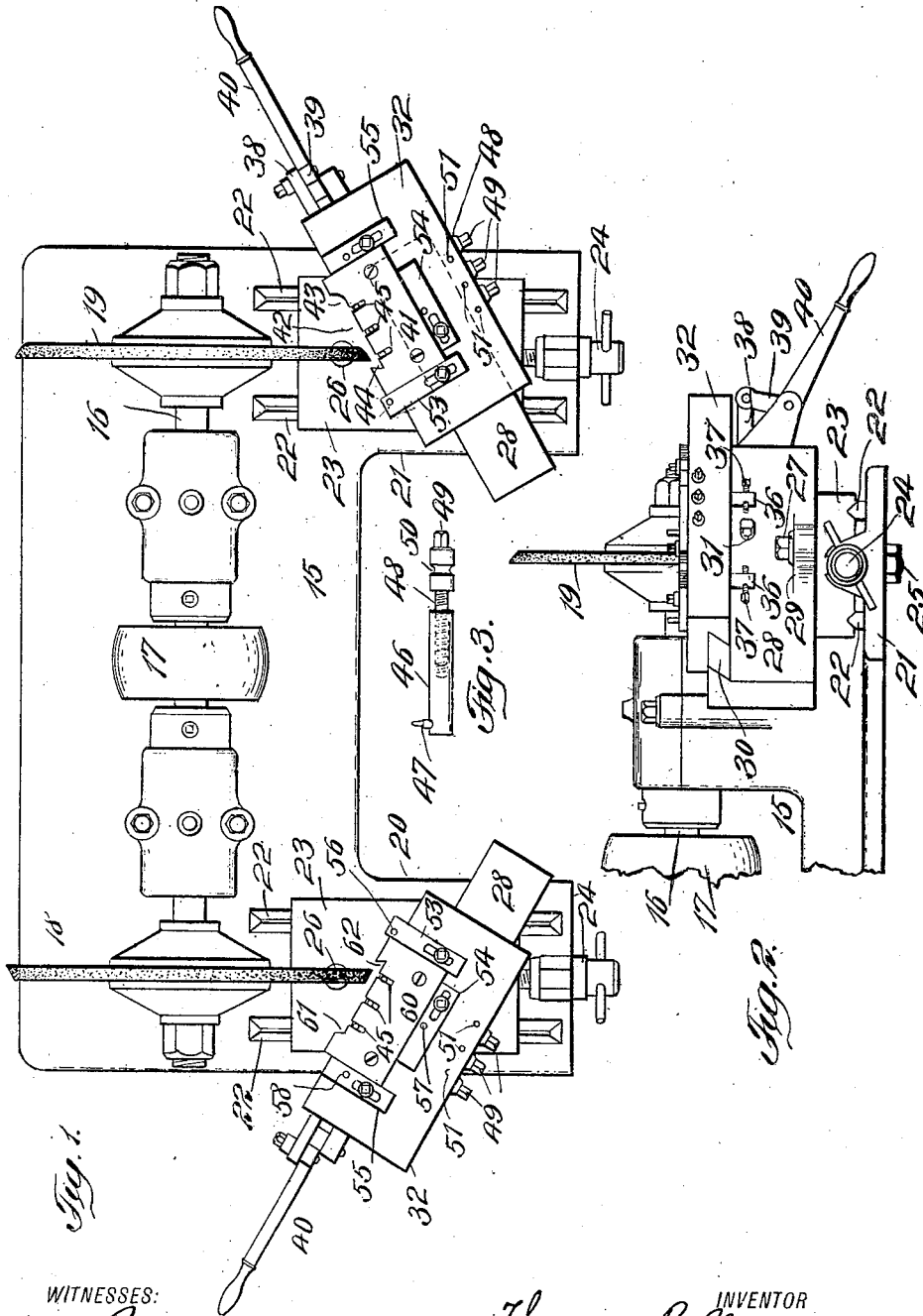


T. R. MOORE.
 KNIFE BLADE SQUARING MACHINE.
 APPLICATION FILED OCT. 2, 1912.

1,046,627.

Patented Dec. 10, 1912.

2 SHEETS—SHEET 1.



WITNESSES:

Arthur Marion
 Anna V. Broderick.

INVENTOR
 Thomas R. Moore.

BY
 Chas. C. Gill
 ATTORNEY

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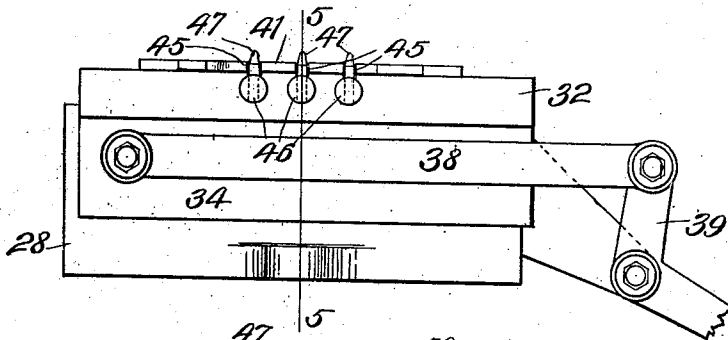


Fig. 4.

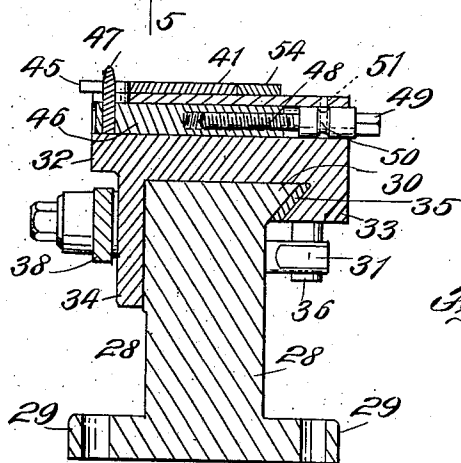


Fig. 5.

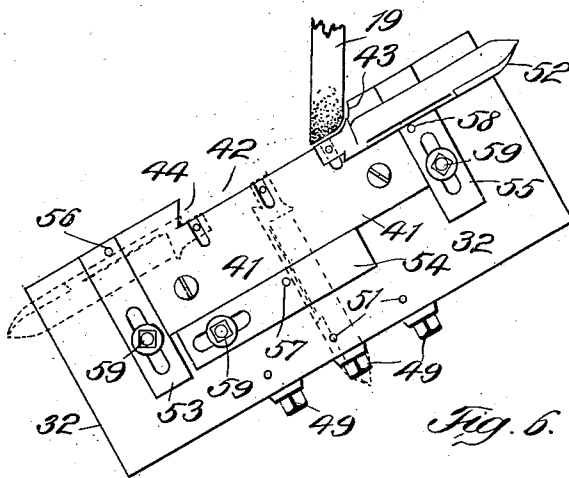


Fig. 6.

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UNITED STATES PATENT OFFICE.

THOMAS R. MOORE, OF WALDEN, NEW YORK.

KNIFE-BLADE-SQUARING MACHINE.

1,046,627.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed October 2, 1912. Serial No. 723,487.

To all whom it may concern:

Be it known that I, THOMAS R. MOORE, a citizen of the United States, and a resident of Walden, in the county of Orange and State of New York, have invented certain new and useful Improvements in Knife-Blade-Squaring Machines, of which the following is a specification.

The object of the invention is to provide a machine with the use of which the tang portions of knife blades may be suitably, uniformly and rapidly squared or treated at their front, back and outer end edges and thereby adapted for the customary handles of pen and pocket-knives.

I preferably construct my machine with two grinding or abrasive wheels, one adapted to the squaring of "pen blades" and the other to the squaring of "pocket blades," and with two sets of mechanism, one for each wheel and each comprising a bed which may be adjusted toward and from the wheel, a horizontal guide thereon standing at an angle to the axis of the wheel, a blade-supporting slide mounted on said guide, and means for effecting the movement of said slide along the cutting edge of the wheel for enabling the latter to remove the exposed portions of the tang of the blade projecting beyond the edge of the slide, said slide preferably being adapted to hold the blade in three positions so that during the operation of the machine the tang of the blade may first have its back edge, then its end edge and finally its front edge squared, the three edges of the tang being with the use of the one wheel squared. When the machine of my invention is provided with two grinding or abrasive wheels, said wheels may be driven by power from a single shaft and one wheel may be employed for the squaring of "pen blades" and the other for the squaring of "pocket blades," and two operatives may be engaged at the machine, each with his own class of blades and neither interfering with the work of the other. The machine may, however, be provided with grinding or abrasive wheels adapted solely for "pen blades" or solely for "pocket blades," but preferably I will equip the machine with one grinding or abrasive wheel intended for the squaring of "pen blades" and another grinding or abrasive wheel adapted for the squaring of "pocket blades."

The invention will be fully understood from the detailed description hereinafter

presented, reference being had to the accompanying drawings, in which:

Figure 1 is a top view of a machine constructed in accordance with and embodying the invention; Fig. 2 is a front elevation of the right hand side portion of the same; Fig. 3 is a detached side elevation of one of the devices for aiding in properly locating and holding a knife blade on the blade-carrying slide forming a part of the machine; Fig. 4 is a rear elevation, taken at a right angle to the rear face thereof, of the guide and knife-blade-carrying slide thereon, the lever mechanism for effecting the movement of said slide on said guide being partly broken away; Fig. 5 is a vertical transverse-section through the same on the dotted line 5-5 of Fig. 4, and Fig. 6 is a top view of the blade-carrying slide and a portion of one of the grinding or abrasive wheels and illustrating the three positions for the blade, the dotted blade-outline at left hand part of the figure showing the position for the blade when the back edge of the tang thereof is to be squared, the middle dotted blade-outline denoting the position for the blade when the end of the tang is to be squared, and the left hand position of the blade represented by solid lines being the one necessary when the front edge of the tang is to be squared.

In the drawings, 15 designates the general frame of the machine suitably supporting a driving shaft 16; provided with a belt-wheel 17 and carrying the grinding or abrasive wheels 18, 19, respectively, the wheel 18 having a sharply beveled periphery adapting it for the squaring of "pen blades" and the wheel 19 having a somewhat curved beveled periphery adapting it for the squaring of "pocket blades." The shaft 16 and wheels 18, 19 may be driven by power through a suitable belt applied to the wheel 17 or otherwise as may be preferred.

At the front of each grinding or abrasive wheel 18, 19, the general frame 15 extends frontwardly forming frame extensions 20, 21, respectively, upon each of which is mounted a set of mechanism embracing my invention and adapted for the proper handling of the blade to enable the wheel to effect the squaring of the tang portion thereof. The mechanisms provided upon the frame extensions 20, 21, correspond with each other with the single exception of the formation of the edge of the blade carrying slide adapting the slide at the left hand

side of the machine for pen blades, while the slide at the right hand side of the machine is adapted for pocket blades. I will first describe in detail the blade-mechanism provided upon the extension 21 of the machine frame, and then briefly refer to the substantially corresponding mechanism mounted upon the extension 20 of said frame. The extension 21 is formed integrally with two parallel V's or rails 22 which extend from the front portion of said extension toward the rear part of the machine and afford a support and tramway for the bed plate 23 which is formed with grooves to ride on said V's or rails in a customary manner and which is equipped with an adjusting screw 24 for enabling the convenient adjustment of the bed plate to its correct position with relation to the grinding or abrasive wheel 19 and any necessary readjustment of said bed and the parts carried thereby toward the said wheel 19 as the latter becomes worn. When the bed 23 has been adjusted to its desired position it will be fastened in a customary manner by means of a bolt 25 engaging a washer or the like 26 connected with the bed plate. The adjusting screw 24 and securing bolt 25 are common expedients in machine construction and are not claimed herein. The bed plate 23 is substantially a plain rectangular flat plate, and upon said plate is rigidly secured by means of bolts 27 or the like, a guide block or bar 28, said guide 28 being in the form of an elongated block of metal, having ears 29 (Fig. 5) through which bolts may be passed for securing the guide upon the bed plate 23. The guide 28 extends at an angle to the longitudinal line of the shaft 16, and in the main the guide is substantially parallel with the beveled edge of the grinding or abrasive wheel in connection with which it is used. The guide 28 for the grinding or abrasive wheel 19 inclines inwardly toward the right while the corresponding guide for the grinding or abrasive wheel 18 inclines inwardly toward the left, these being the directions of the beveling on the peripheries of the grinding wheels. The guide 28 has a flat upper surface and a flat rear wall, and at its upper inner edge the upper portion of the guide is formed with a forwardly projecting flange 30. At its vertical front portion the guide 28 is provided with a rigid stop 31, which will be hereinafter referred to.

Upon the guide 28 is mounted the blade carrying slide 32, which has a substantially flat upper surface and at its front and rear edges has depending portions 33, 34, respectively, which pass upon and engage the upper portions of the guide 28, as shown more clearly in Figs. 4 and 5. The portion 33 of the slide 32 extends below the flange 30 on the guide 28 and aids in hold-

ing the slide firmly upon the guide. A customary gib 35 may be provided between the portion 33 of the slide and the flange 30 of the guide. The slide 32 is provided with two depending lugs 36 carrying set screws 37 at opposite sides of the stop 31, as shown in Fig. 2, and these set screws 37 in connection with the stop or lug 31 are employed to control and limit the movement the slide 32 may have upon the upper edge of the guide 28. The slide 32 is connected by a link 38 with an arm 39 of a pivoted operating handle 40, which under the manual control of the operative, is utilized to effect the proper sliding movement of the slide 32 on the guide 28 during the operation of the grinding or abrasive wheel 19, as will appear more fully hereinafter.

The slide 32 has secured upon its upper face a hardened plate 41, which is a work or face-plate and may be considered as a permanent part of the slide. The plate 41 is formed along its rear edge with a main recess, which I number 42 for identification (Fig. 6), one end of which is open and concaved or rounded, as at 43, and the other end of which terminates in an acute angle 44. The plate 41 is formed with three recesses or slots 45 cut inwardly from the recess 42 and extending at right angles thereto. Within the slide 32 are three parallel cylindrical openings extending transversely to the length of the same, and within each of these openings I provide a cylindrical follower or rod 46 having upon its inner or rear end a vertical pin 47 and engaged at its front end by an adjusting screw 48 whose external thread engages an internal thread formed within the forward tubular part of the rod 46. The screw 48 has an exposed polygonal end 49 which may be engaged by a key or the like for rotating the screw, and adjacent to the outer portion of the screw the head thereof is formed with an annular groove 50 into which is entered through the top of the slide 32 a pin or stud 51 which permits the screw 48 to have a rotary motion but prevents the screw from moving in line with its length. The pins 47 on the rods 46 are employed to aid in securing the knife-blade, which I number 52, in its several positions on the work plate 41, and the screws 48 are provided to enable the adjustment of the pins 47 with respect to the correct positions desired for said blade in accordance with its size and shape and the particular treatment to which its tang portion is to be subjected. I provide three of the pins 47 since in the complete squaring of the tang portion of the blade 52, said blade should be successively held in three positions, as I represent in Fig. 6.

In Fig. 6 I illustrate the blade in its final position by solid lines and its condition in-

dicates that the front squaring of the tang
 of the blade has just been completed, the
 squaring of the back of the tang having been
 finished when the blade was in the position
 5 shown by the left hand dotted lines in Fig.
 6 and the end of its tang having been squared
 when the blade was in the middle blade-
 position denoted by dotted lines in Fig. 6.
 The pins 47 project upwardly above the
 10 upper plane of the work-plate 41 and are of
 proper diameter to snugly receive upon them
 the pin hole in the tang of the blade 52.
 Upon the slide 32 I also provide gages 53,
 54 and 55 carrying vertical studs or pins 56,
 15 57, 58 respectively, to aid in maintaining
 the blade 52 in its several positions, said
 gages also being adjustable by means of set
 screws 59 for properly locating the studs
 or pins 56, 57, 58 with respect to the size
 20 and character of the blade 52. When the
 blade is placed in its first position, shown
 at the left hand side of Fig. 6, by dotted
 lines, the tang of the blade is placed upon
 the left hand one of the pins 47 and its
 25 back moved against the pin 56, a portion of
 the tang of the blade when in this position
 being projected into the recess 42 at the
 inner or rear edge of the plate 41, and there-
 upon the slide 32 will, by means of the
 30 handle 40, be moved to carry such exposed
 portion of the tang blade against the wheel
 19 which, as the slide is gradually moved to
 carry said tang against it, will operate to cut
 away such exposed portion of the tang and
 35 leave the blade squared at its back edge in
 the manner represented at the left hand side
 of Fig. 6. After the back of the tang of
 the blade has been squared, the blade will
 be elevated from the left hand pin 47 and
 40 placed on the middle pin 47 and have its
 back edge stayed by the pin 57, the end of
 the tang then projecting slightly beyond the
 work-plate 41 and into the recess 42, and
 thereupon the operator, by means of the
 45 handle 40, will gradually move the slide 32
 to carry the blade against the wheel 19, with
 the result that said wheel will grind off or
 square the end of the tang of the blade.
 Thereafter the blade will be elevated from
 50 the middle pin 47 and placed on the right
 hand pin 47 with its back edge against the
 stay pin 58 or in the position shown by full
 lines in Fig. 6, a portion of the front of the
 tang of the blade at such time projecting
 55 into the recess 42 at the edge of the work-
 plate 41, and thereupon the operator by
 means of the handle 40 will move the slide
 32 to carry the thus exposed portion of the
 front of the tang against the wheel 19 so
 60 that said wheel may remove said projected
 portion and thereby square the front of the
 tang or reduce it to the finished condition
 illustrated in Fig. 6.

During the action of the wheel 19 against
 65 the blade 52, the operator will press with his

finger upon the exposed upper face of the
 blade so as to aid in steadying the same upon
 the work-plate and holding it firmly down
 thereon. After the blade 52 has had its
 front squaring completed it will be removed
 70 from the work-plate 41 and thereupon an-
 other blade may be placed on the work-plate
 in the three successive positions illustrated
 in Fig. 6 and have its back, end and front
 squaring completed; it being the intention
 75 that one blade after another shall be treated
 on the work-plate 41, and that said work-
 plate shall be actuated to carry the blade to
 the grinding wheel 19 by means of the hand-
 lever 40. The ends of the recess 42 conform
 80 to the particular shape desired for the inner
 ends of the tang of the blade; the work-
 plate 41 supports substantially all of the
 blade except the portions of its tang exposed
 in said recess and to be removed and the
 85 stop 31 and screws 37 limit the movement of
 the slide 32 and assure the correct formation
 of the inner ends of the back and front edges
 of the tang. The parts of the machine are
 adjustable so as to adapt the machine to
 90 blades varying in size and other character-
 istics. The screws 48 are utilized to so lo-
 cate the holding pins 47 for the tang of the
 blade as to control the exposure of such tang
 beyond the edge of the plate 41 and thereby
 95 regulate the quantity of metal which shall
 be removed from the tang by the grinding
 wheel 19. The gages 53, 54, 55 are also
 adjustable to properly locate the pins 56, 57,
 58 with respect to the special character of
 100 blade under treatment. The slide 32 carry-
 ing the work-plate 41 may be controlled in
 its movements by the stop 31 and adjustable
 stop-screws 37, and as the periphery of the
 grinding wheel wears down the bed-plate 23
 105 may be adjusted toward said wheel by means
 of the screw 24.

The mechanism provided on the extension
 20 of the main frame 15 is a counterpart of
 the mechanism provided upon the extension
 110 21 of said frame and which has been de-
 scribed in detail, with the single exception
 that the work-plate at the left hand side of
 the machine and which being possibly a
 modification I will designate by the numeral
 115 60, is not formed at the end of its recess with
 the end-curvature 43 of the recess 42 in the
 work-plate 41 shown at the right hand side
 of the machine, but on the contrary is pro-
 120 vided with an angular recess 61 of the char-
 acter requisite for the squaring of pen-
 blades. I will, therefore, number the several
 parts of the mechanism upon the extension
 20 of the general frame correspondingly
 with the like parts hereinbefore described as
 125 being above the extension 21 of said frame,
 since said mechanism above the extension 20
 will be clearly understood without special
 detailed explanation. The grinding wheel
 130 18 instead of having one rounded peripheral

edge has sharp peripheral edges corresponding with the recesses 61, 62 at the edge of the work-plate 60, and except for the shape of the peripheral edge of the grinding wheel 18 and the presence of the angular recess 61 in the work-plate 60, the mechanism at the left hand side of the machine corresponds with the mechanism at the right hand side thereof. With the two sets of mechanism provided in one machine, one set being intended for squaring pen-blades and the other pocket blades, and both grinding wheels being driven from one shaft, the squaring of blades may be performed economically and rapidly and with the presence of two operators at each machine.

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

1. A machine for squaring the tangs of knife blades comprising a grinding wheel having a beveled periphery, a slide extending at an angle to the axis of said wheel and affording a support for a knife blade, means for positioning the blade on said slide with a portion of the tang of the blade exposed beyond the edge thereof, and means for moving said slide to carry the exposed portion of said tang along and against the periphery of said wheel.

2. A machine for squaring the tangs of knife blades comprising a grinding wheel having a beveled periphery, a slide extending at an angle to the axis of said wheel and affording a support for a knife blade, means for positioning the blade on said slide with a portion of the tang of the blade exposed beyond the edge thereof, means for adjusting said slide transversely toward said wheel, and means for moving said slide to carry the exposed portion of said tang along and against the periphery of said wheel.

3. A machine for squaring the tangs of knife blades comprising a grinding wheel having a beveled periphery, a slide extending at an angle to the axis of said wheel and affording a support for a knife blade, adjustable means carried by said slide for positioning the blade thereon and controlling the extent of the tang portion of the blade to be exposed for removal beyond the edge of the slide, and means for moving said slide to carry the exposed portion of said tang along and against the periphery of said wheel, the said adjustable means carried by the slide comprising a gage thereon for engaging the edge of the blade and a transversely adjustable rod having a vertical pin to engage the pin-hole in the tang of the blade.

4. A machine for squaring the tangs of knife blades comprising a grinding wheel having a beveled periphery, a slide extending at an angle to the axis of said wheel and affording a support for a knife blade, adjustable means carried by said slide for

positioning the blade thereon and controlling the extent of the tang portion of the blade to be exposed for removal beyond the edge of the slide, and means for moving said slide to carry the exposed portion of said tang along and against the periphery of said wheel, the said adjustable means carried by the slide comprising a gage thereon to engage the edge of the blade, a transversely slidable rod having a vertical pin exposed to engage the pin-hole in the tang of the blade and a non-slidable screw having a thread-connection with said rod and a head to be engaged by means for turning the screw.

5. A machine for squaring the tangs of knife blades comprising a grinding wheel having a beveled periphery, a slide extending at an angle to the axis of said wheel and affording a support for a knife blade, a plurality of means for positioning the blade on said slide with the several edge portions of its tang to be removed successively exposed beyond the edge of the slide, and means for moving the slide to carry the successively exposed portions of said tang along and against the periphery of said wheel.

6. A machine for squaring the tangs of knife blades comprising a grinding wheel having a beveled periphery, a slide extending at an angle to the axis of said wheel and affording a support for a knife blade, a plurality of means for positioning the blade on said slide with the several edge portions of its tang to be removed successively exposed beyond the edge of the slide, and means for moving the slide to carry the successively exposed portions of said tang along and against the periphery of said wheel, said means for positioning the blade comprising gages on the slide to engage the edge of the blade in its several positions of the latter, and transversely adjustable rods having vertical pins exposed to engage the pin-hole in the tang in the several positions of the blade.

7. A machine for squaring the tangs of knife blades comprising a grinding wheel having a beveled periphery, a slide extending at an angle to the axis of said wheel and affording a support for a knife blade, a plurality of means for positioning the blade on said slide with the several edge portions of its tang to be removed successively exposed beyond the edge of the slide, and means for moving the slide to carry the successively exposed portions of said tang along and against the periphery of said wheel, said means for positioning the blade comprising three adjustable gages on the slide to engage the edge of the blade in the three positions of the latter successively exposing the back edge, outer end edge and front edge of its tang beyond the slide, three parallel trans-

versely adjustable rods within said slide and having vertical pins exposed above the same to engage the pin-hole in the tang in the three positions of the blade, and non-slidable screws respectively having thread-connection with said rods and heads to be engaged by means for turning the screws.

8. A machine for squaring the tangs of knife blades comprising a grinding wheel having a beveled periphery, a slide extending at an angle to the axis of the wheel and affording a support for a knife-blade and recessed at its edge adjacent to the wheel for exposing beyond said edge and within said recess such portion of the tang of the blade as it may be desired to remove, means for moving said slide to carry the exposed portion of said tang along and against the periphery of said wheel, and means for limiting the movement of said slide.

9. A machine for squaring the tangs of knife blades comprising a grinding wheel having a beveled periphery, a slide extending at an angle to the axis of the wheel and affording a support for a knife blade and recessed at its edge adjacent to the wheel for exposing beyond said edge and within said recess such portions of the tang of the blade as it may be desired to remove, said recess conforming at its ends to the desired squaring of the back and front of the tang,

means for successively positioning the blade on said slide with the several edge portions of its tang to be removed exposed within said recess, means for moving said slide to carry the exposed portions of said tang along and against said wheel, and means for limiting the movement of said slide.

10. A machine for squaring the tangs of knife blades comprising a main frame, two oppositely beveled grinding wheels, a driving shaft common to said wheels and mounted in bearings on said frame, slides mounted on said frame and extending at angles, conforming to the beveling of said wheels and each affording a support for a knife blade, means for adjusting said slides transversely toward said wheels, a plurality of means on each slide for positioning the blade thereon with the several edge portions of the tang to be removed successively exposed beyond the edge of the slide, means for moving the slides to carry the successively exposed portions of the tangs along and against said wheels, and means for limiting the movements of said slides.

Signed at Walden, in the county of Orange and State of New York, this 30th day of September A. D. 1912.

THOMAS R. MOORE.

Witnesses:

A. S. EMBLER,
C. R. TEARSE.