T. R. MOORE.

KNIFE BLADE SWAGING MACHINE.

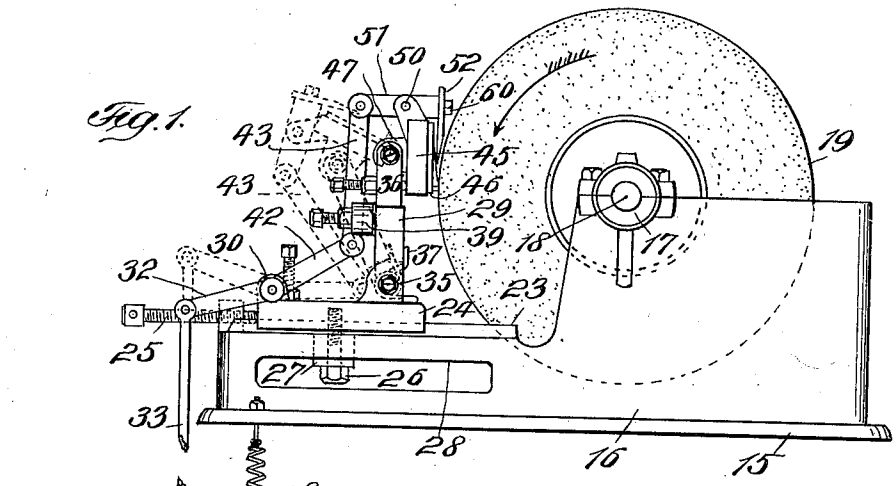
APPLICATION FILED AUG. 27, 1912.

1,091,074.

Patented Mar. 24, 1914.

2 SHEETS—SHEET 1.

Fig. 1.



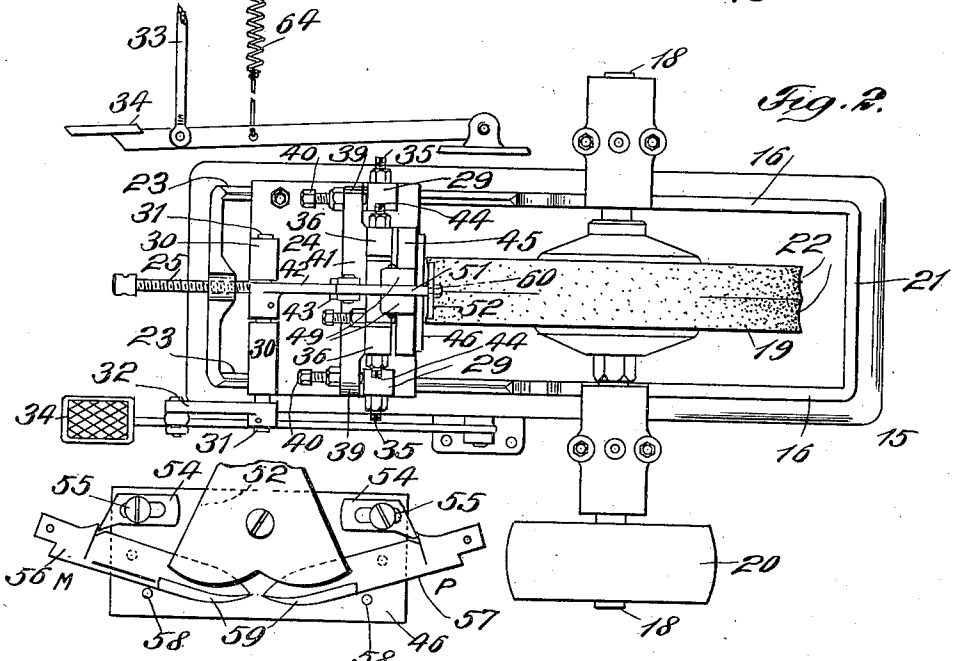


Fig. 2.

Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 4.

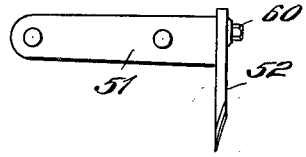


Fig. 5.

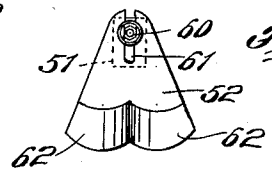


Fig. 6.

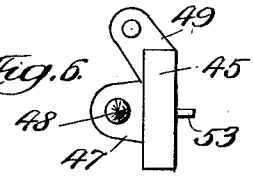


Fig. 7.

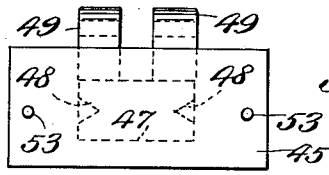


Fig. 8.

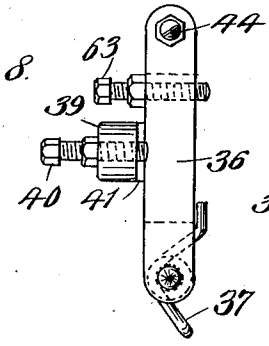


Fig. 9.

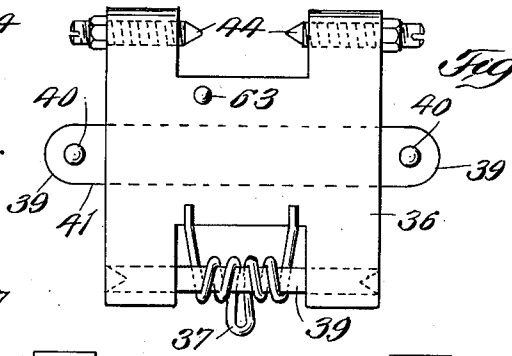


Fig. 10.

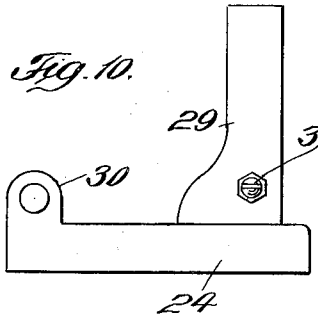
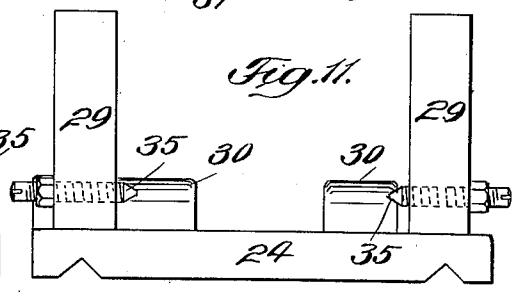


Fig. 11.



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UNITED STATES PATENT OFFICE.

THOMAS R. MOORE, OF WALDEN, NEW YORK.

KNIFE-BLADE-SWAGING MACHINE.

1,091,074. Specification of Letters Patent. Patented Mar. 24, 1914.

Application filed August 27, 1912. Serial No. 717,261.

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-Swaging Machines, of which the following is a specification.

The object of the invention is to provide a highly efficient machine for swaging or forming the beveled surfaces on the forward edges of the back of knife blades with accuracy and reasonable rapidity.

I will preferably construct the machine of my invention to treat or swage two knife blades at one time, although, if desired, one blade at a time may be swaged, first on one side and then on the other with the use of my invention.

The machine of my invention comprises a rotary, abrasive or swaging wheel, suitable means for correctly supporting a blade or blades, and means preferably actuated by a foot treadle for moving the same to carry the blade or blades against said wheel and there holding the same until the proper surfaces have been formed on the exposed side of the blade or blades, after which, upon the release of the foot from the foot treadle, the blade carrying means will automatically recede from the abrasive wheel and the blade or blades be reversed in the clamping means and then again returned to the abrasive wheel to be swaged on the then exposed side or sides thereof.

I preferably construct the machine of my invention with a blade supporting plate and clamping means for properly holding two blades for presentation at the same time to the abrasive wheel so that the beveled surfaces on the outer edges of one face of said blades may be simultaneously formed at one operation of the machine and that thereafter, upon the blades being reversed in their relation to each other or transposed in position and turned over, the other face of said blades may, at the succeeding operation of the machine, have the requisite beveled surfaces formed on their outer edges, the two blades thus at two operations of the machine or with two applications of the same to the abrasive wheel being completed, as to the swaging, on both sides.

One purpose of my invention is to very materially lessen the labor and cost of swaging knife blades and to provide a machine by which the swaging of the blades may be performed with extreme accuracy and automatically upon the presentation of the blades on the actuation of a foot treadle to the abrasive wheel, which will be driven by power.

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 side elevation, partly broken away, of a machine constructed in accordance with and embodying the invention, the movable parts of the machine being shown in their operative relation to the abrasive wheel by solid lines and in their inoperated position by dotted lines; Fig. 2 is a top view of the same; Fig. 3 is an enlarged detached view of the blade carrying plate, with the clamp for binding the blades against the plate indicated by dotted lines; Fig. 4 is a detached side elevation of the clamp for binding the blades against the blade carrying plate; Fig. 5 is an end view of the same taken from the right hand end of Fig. 4; Fig. 6 is a detached side elevation of the bed for carrying the blade supporting plate and also the clamping means shown in Figs. 4 and 5; Fig. 7 is a face view of the same taken from the right hand side of Fig. 6; Fig. 8 is a detached edge view of the pivoted frame for supporting the bed member shown in Figs. 6 and 7; Fig. 9 is a face view of the same taken from the right hand side of Fig. 8; Fig. 10 is an edge view of a movable carriage mounted upon the bed plate of the machine and arranged to pivotally support the frame shown in Figs. 8 and 9, and Fig. 11 is a rear view of the same, taken from the right hand end of Fig. 10.

In the drawings, 15 designates the general supporting frame of the machine which may be mounted upon a bench or upon legs or other support, said frame preferably being an integral casting having sides 16 which support the operative parts of the machine. The sides 16 at the rear portion of the frame 15 extend upwardly to a suitable extent to afford a bearing 17 for the shaft 18 of the swaging or abrasive wheel 19, which preferably will be driven by power through a belt wheel 20, the rear portions of the sides 16, together with the end portion 21 of the frame 15, creating a box formation within which the wheel 19 is partly inclosed, as shown.

The wheel 19, in the illustration of my invention presented herein, is adapted to act upon two blades at one time, and in consequence is formed on its periphery with two corresponding annular grooves 22, whose purpose will be more fully understood from the description hereinafter presented. The wheel 19 may be constructed of any suitable abrasive substance.

The forward portions of the sides 16 of the main frame 15 have formed upon their upper edges V's or guide rails 23, upon which is mounted the adjustable bed plate 24 for the operative parts of the machine having to do with supporting and applying the blades to the wheel 19 and removing the blades therefrom. The bed plate 24 extends transversely from one side of the machine to the other and is adjustable on the V's or guide rails 23 by means of the screw 25. After proper adjustment the bed plate 24 may be secured in fixed position by means of the screw 26 entering the lower side of said bed plate and having a head which engages an angle iron piece 27 whose horizontal member is in engagement with the lower edge 28 of a part of one side 16 of the main frame, the vertical member of said angle piece 27 being in engagement with the lower side of the bed plate 24 and the head on said screw 26 being adapted to bind against the horizontal member of said angle iron piece.

The bed plate 24 is formed at its rear end with two vertical standards 29 (Figs. 10 and 11) and at its front end with two bearings 30 for a shaft 31, upon which an operating crank 32 connected with a pitman rod 33 and foot treadle 34, is secured, the purpose of said crank, pitman rod and foot treadle being to impart at the proper time a partial rotary or rocking movement to the shaft 31 for effecting therewith the operation of certain other parts of the machine presently to be described.

The standards 29 are integral with the bed plate 24, and said standards on pivot screws 35 pivotally support the frame 36 (Figs. 8 and 9), which is adapted to have a swinging motion on the screws 35 toward and from the abrasive wheel 19, the movement of said frame 36 toward the wheel 19 being effected by the operator pressing on the treadle 34 and the reverse movement of said frame, or to its normal position in a direction from said wheel 19, being effected by a spring 37 coiled upon a rod portion 38 of said frame and at its lower portion flexed against the bed plate 24. The spring 37 acts to yieldingly hold the frame 36 in its receded or normal position illustrated by dotted lines in Fig. 1. The frame 36 has at its opposite edges laterally extending ears 39 carrying adjusting screws 40, said ears being the end portions of a transverse bar 41 cast integrally with the frame 36 and projected at its ends in the plane of the standards 29 between which the body of the frame 36 is held and has its movement. The ends of the bar 41 forming the ears 39 prevent, on the movement of the frame 36 toward the abrasive wheel 39, said frame from having an undue movement, and the presence of the adjusting screws 40 enables the operator to control or adjust the throw of said frame 36 toward the abrasive wheel 19 in accordance with the thickness and character of the blades to be treated by said wheel. The throw of the frame 36 toward the abrasive wheel 19 under the action of the foot treadle 34 may thus be adjusted by will by means of the stop screws 40, which on each forward thrust of the frame 36 engage the standards 29 and arrest said frame. The throw of the frame 36 in opposition to the force of the spring 37 and in a direction toward the abrasive wheel 19 or from the dotted position of said frame shown in Fig. 1 to the position illustrated by solid lines, is accomplished through a crank arm 42 secured on the operating shaft 31 and pivotally connected with the link 43, whose operative connections will be hereinafter referred to.

The upper portion of the frame 36 pivotally supports upon the pivot screws 44 the bed 45 which carries the blade supporting plate 46, said bed 45 being disposed at the rear side of the upper portion of the frame 36 or between said frame and the abrasive wheel 19, as more clearly illustrated in Fig. 1, and having a forwardly projecting lug 47 formed with bearing recesses 48 for said pivot screws 44, as shown in Figs. 6 and 7. The bed 45 is also formed with upwardly and frontwardly extending ears 49 through which a pin 50 passes upon which and between said ears is mounted a bar 51 carrying at its rear end the clamp plate 52 and at its forward end being pivotally connected with the link 43 hereinbefore referred to. The bed 45 is provided on its operative face with dowel pins 53 (Figs. 6 and 7) which enter corresponding holes in the blade carrying plate 46 and thereby serve to aid in supporting and properly locating the plate 46 on said bed. The plate 46 is a rectangular plate removably fastened to the bed 45 and when intended for use in supporting two blades, as shown in Fig. 3, is equipped with two gages 54 adapted to engage the kicks of the blades and adjustable by means of screws 55 so as to adapt them for blades differing in character. I number the two blades shown in Fig. 3 as 56, 57, and as illustrated said blades lie against the plate 46 and are supported at their lower edges by dowel pins 58 and incline downwardly toward each other. For purposes of description I number the swaged or beveled surfaces of the blades

produced by the grinding or swaging wheel, 59, the production of the surfaces 59 on the blades being the purpose of my invention.

The clamp 52 is secured upon the end of the bar 51 by means of a screw 60, and said clamp may be adjusted vertically on the bar 51 by reason of the fact that the screw 60 passes through the vertical slot 61 in said clamp. The adjustment of the clamp 52 is desirable in adapting the same to blades differing in character. The clamp 52 is a fan-shaped plate, and in the present instance is formed at its lower edges with two corresponding beveled and curved surfaces 62 corresponding with the curvature of the annular grooves 22 in the wheel 19, it being the intention that, in use, the wheel 19 may rotate in close relation to the lower portions of the clamp 52 without grinding against the same. The clamp 52 is secured in fixed relation to the bar 51, but since the bar 51 is pivotally mounted between the ears 49 of the bed 45, said clamp is adapted to have a rocking motion toward and from said bed and consequently toward and from the plate 46 and blades 56, 57 supported thereby. I indicate by dotted lines in Fig. 3 the position of the clamp 52 with relation to the blades 56, 57 when said clamp is in its operative position binding said blades against the plate 46.

From the foregoing description it will be seen that the frame 36 is pivotally mounted at its lower end over the main bed plate or carriage 24, that the bed 45 carrying the blade supporting plate 46 is pivotally mounted in the upper end of said frame 36, and that the clamp bar 51 is pivotally mounted between the ears 49 at the upper end of said bed 45. When these parts just referred to are released to take their normal position or the relation to one another illustrated by dotted lines in Fig. 1, the spring 37 acts to swing the upper portion of the frame 36 frontwardly and the treadle-spring 64 acting through the shaft 31, crank-arm 42 and link 43 exerts a forward and downward pulling action on the clamp-bar 51, whereby the bed 45 takes almost a horizontal position, the clamp arm 51 nearly a vertical position, and the clamp 52 an elevated position above the blade plate 46 and blades that may be at the time thereon. When the blades have been applied upon the plate 46, with the latter on the bed 45, and it is desired to move the blades against the abrasive wheel 19, the operator will press downwardly on the foot treadle 34 and thereby through the crank arm 32 turn the shaft 31 downwardly toward the front and cause it to move the rear end of the crank arm 42 upwardly, thereby through the link 43 rocking the clamp bar 51 rearwardly and downwardly and causing the clamp 52 to bind against the knife-blades on the plate 46, following which action the continued upward movement of the crank arm 42 and link 43 effects the rocking rearwardly of the bed 45 without disturbing its relation to the clamp 52 and finally in the movement of the frame 36 to its vertical position or until the stop screws 40 thereon become arrested by the standards 29 of the main bed or carriage 24, under which condition the knife blades will have become carried against the wheel 19 and the latter will form thereon the swaged or beveled surfaces 59.

I provide in the upper portion of the frame 36 a set screw 63, whose inner end is in rear of the bed 45 and which is employed to secure the proper adjustment of the said bed to the grinding wheel so as to adapt the machine to make just the beveled surface 59 desired and also to enable blades differing in character to be swaged by the machine.

When two blades 56, 57 are placed on the plate 46 and presented to the wheel 19, both blades will be acted on simultaneously, and in order that two blades may thus be treated at one time I form the wheel 19 with the two peripheral grooves 22. If it may be understood that the blades 56, 57 have been treated on their exposed faces by the swage wheel 19, and it is desired to swage or bevel the other or reverse faces of said blades, the blades will be removed from the plate 46 and transposed in position and turned over on the plate 46, so that the "pile-side" of the blade 56 may become exposed at the right hand side of the plate 46 and the "name-side" of the blade 57 become exposed at the left hand side of said plate 46, and thereupon at the succeeding operation of the machine the said blades will have the swaging completed, the first operation having completed the "name-side" of the blade 56 and "pile-side" of the blade 57, and the second operation having finished the "pile-side" of the blade 56 and the "name-side" of the blade 57.

I do not limit my invention to the presence of the two annular grooves 22 in the wheel 19, but obviously the work of swaging knife blades may be very greatly expedited by treating two blades at the same time, as against treating one blade at a time. Nor do I limit my invention to all of the details of form, construction and arrangement illustrated, since obviously the machine is susceptible of modification in respect to its details.

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

1. In a knife-blade swaging machine, an abrasive wheel having a peripheral groove, a bed having means for detachably holding a blade thereon with one face of the blade partly exposed, and means for moving the bed to present the side edge of the forward back portion only of the blade angularly to

the groove in said wheel, for swaging said portion to the point of the blade.

2. In a knife-blade swaging machine, an abrasive wheel having two corresponding parallel peripheral grooves, a bed having means for detachably and reversibly holding two corresponding blades on corresponding inwardly converging lines, and means for moving said bed to present the side edges of the forward back portions only of the blades angularly to the grooves in said wheel, for swaging said portions to the points of the blades.

3. In a knife-blade swaging machine, an abrasive wheel having a peripheral groove, a bed having means for detachably holding a blade thereon with one face of the blade partly exposed, a clamp to engage the exposed face of the blade to bind the blade against said bed, and lever means for moving the clamp against the blade and the bed to present the side edge of the forward back portion only of the blade angularly to the groove in said wheel, for swaging said portion to the point of the blade.

4. In a knife-blade swaging machine, an abrasive wheel having two corresponding parallel peripheral grooves, a bed having means for detachably and reversibly holding two corresponding blades on corresponding inwardly inclined lines, a clamp to engage the exposed faces of both blades to bind the blades against said bed, and lever means for moving the clamp to engage said faces of the blades and the bed to present the side edges of the forward back portions only of the blades angularly to the grooves in said wheel, for swaging said portions to the points of the blades.

5. A knife-blade swaging machine comprising an abrasive wheel having a peripheral groove, a pivotally mounted bed for supporting the blade to be swaged, a pivotally mounted frame supporting said bed, a pivotally mounted clamp for binding against the blade, and means for turning the clamp against the blade and the bed to present the clamped blade to said wheel.

6. A knife-blade swaging machine comprising an abrasive wheel, a bed-plate adjustable toward and from said wheel, a frame pivotally mounted at its lower end on said bed-plate, a bed for supporting the blade pivotally mounted on the upper end of said frame, a clamp pivotally mounted on the upper end of said blade-supporting bed, and means for moving the clamp to engage the blade and the bed to present the clamped blade to said wheel.

7. A knife-blade swaging machine comprising an abrasive wheel, a bed-plate adjustable toward and from said wheel, a frame pivotally mounted at its lower end on said bed-plate, a bed for supporting the blade pivotally mounted on the upper end of said frame, a clamp pivotally mounted on the upper end of said blade-supporting bed, a foot-treadle and pivoted connections leading therefrom to said clamp for moving the clamp to engage the blade and the bed to present the clamped blade to said wheel, and a spring for reversing the movements of the clamp and bed.

Signed at New York city, in the county of New York and State of New York, this 26th day of August, A. D. 1912.

THOMAS R. MOORE.

Witnesses:

CHAS. C. GILL,

ARTHUR MARION.