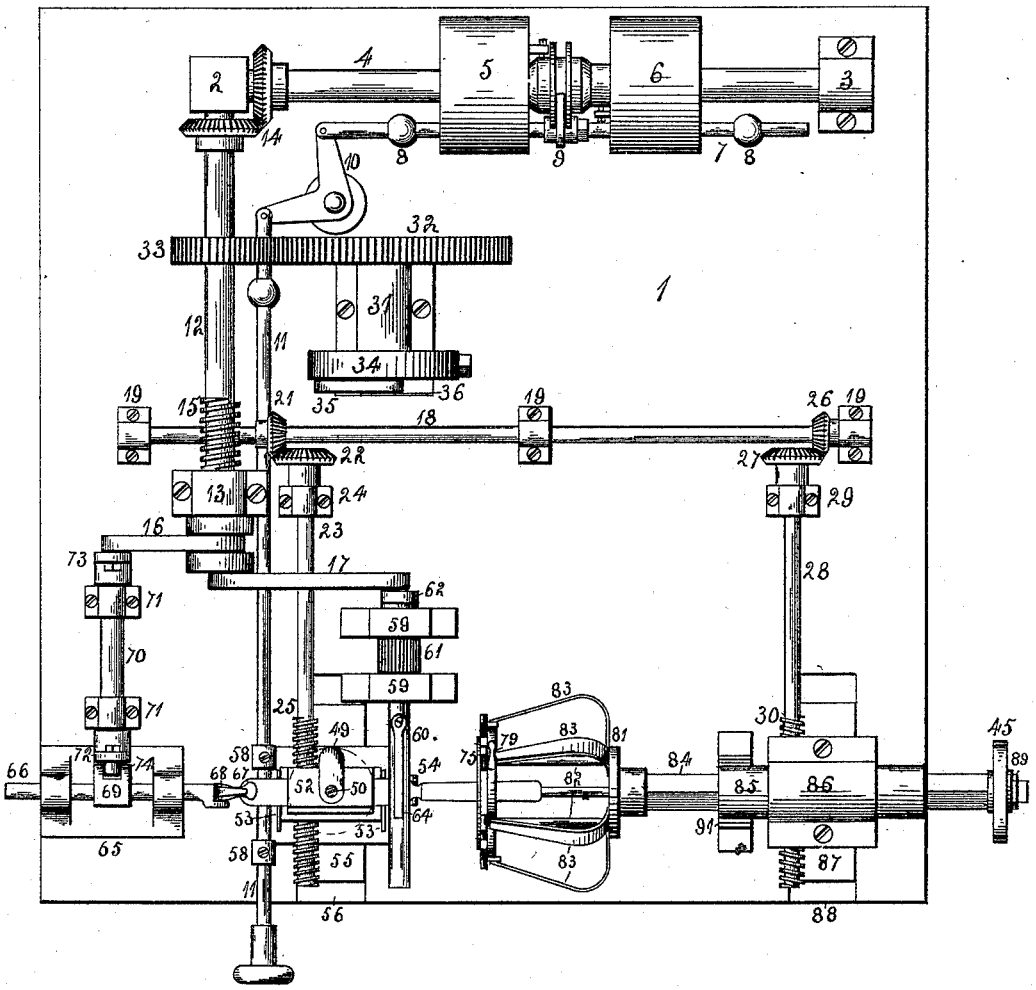
(No Model.) 5 Sheets—Sheet 1.

G. B. KELLEY.

KNIFE BURNISHING MACHINE.

No. 526,656. Patented Sept. 25, 1894.

Fig. 1.



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KNIFE BURNISHING MACHINE.

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Fig. 2.

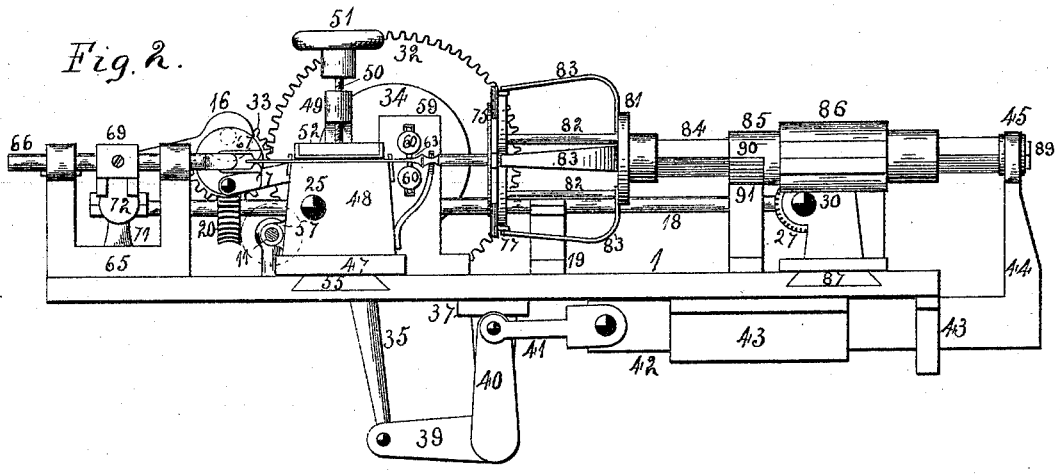
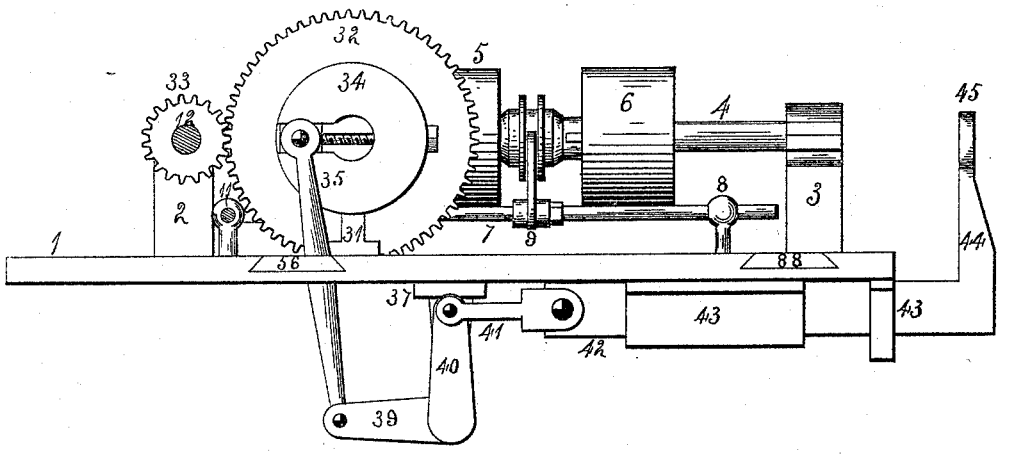


Fig. 3.



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KNIFE BURNISHING MACHINE.

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Fig. 4.

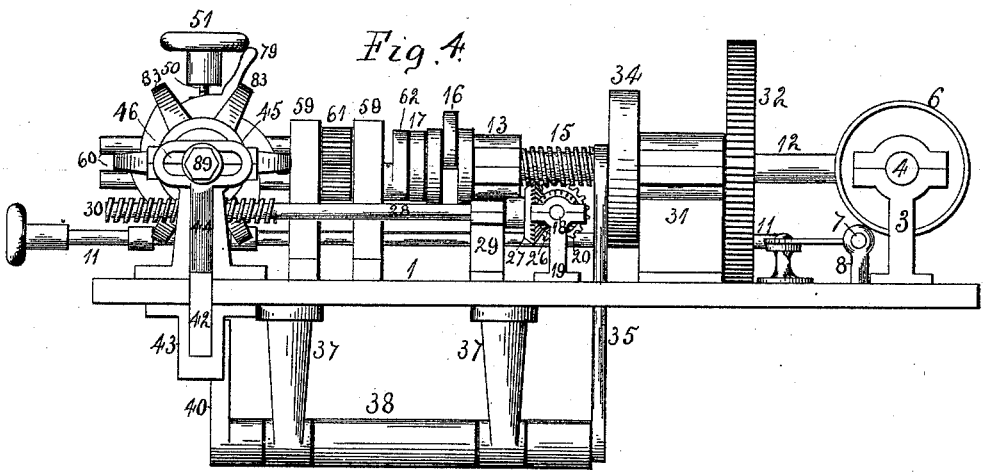
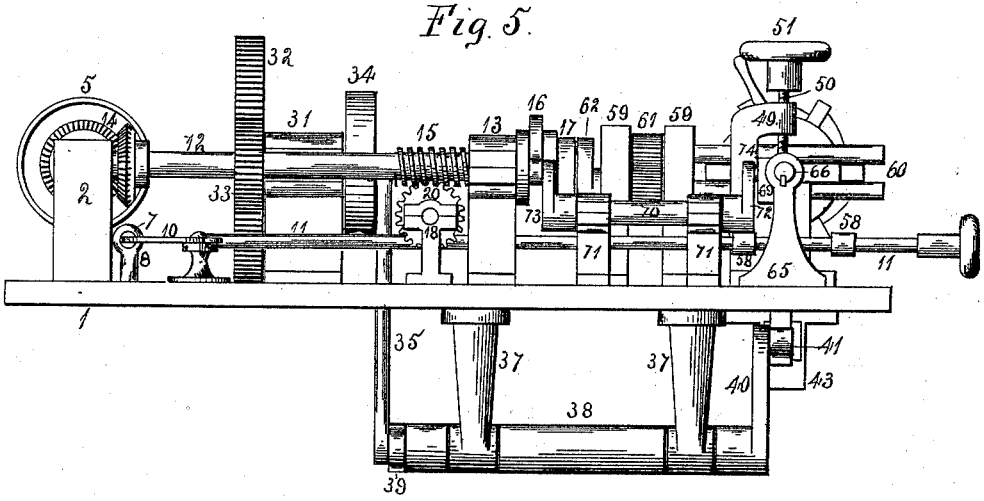


Fig. 5.



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G. B. KELLEY.

KNIFE BURNISHING MACHINE.

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Fig. 6.

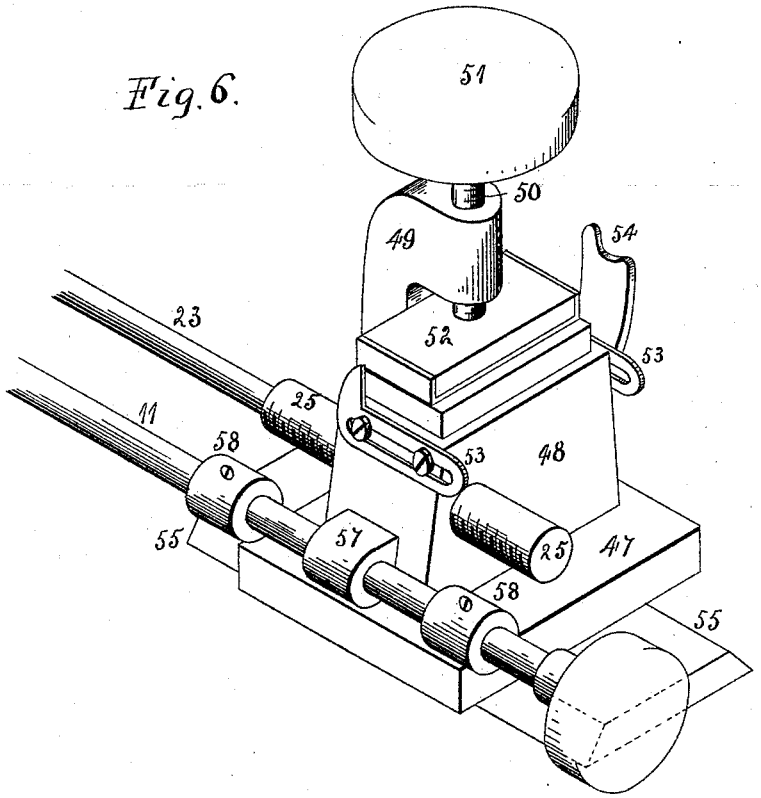

Fig. 7.

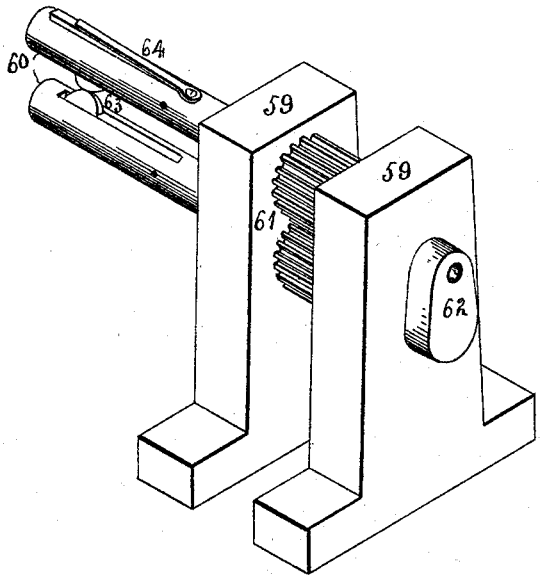

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Fig. 8.

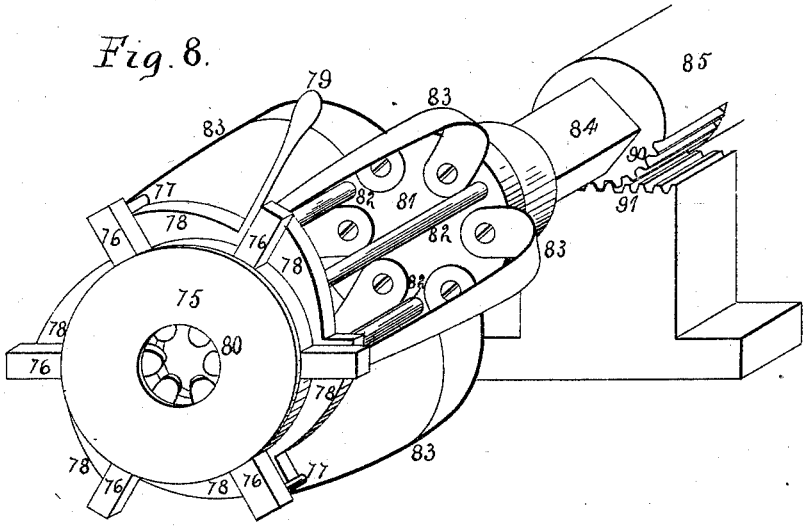


Fig. 9.

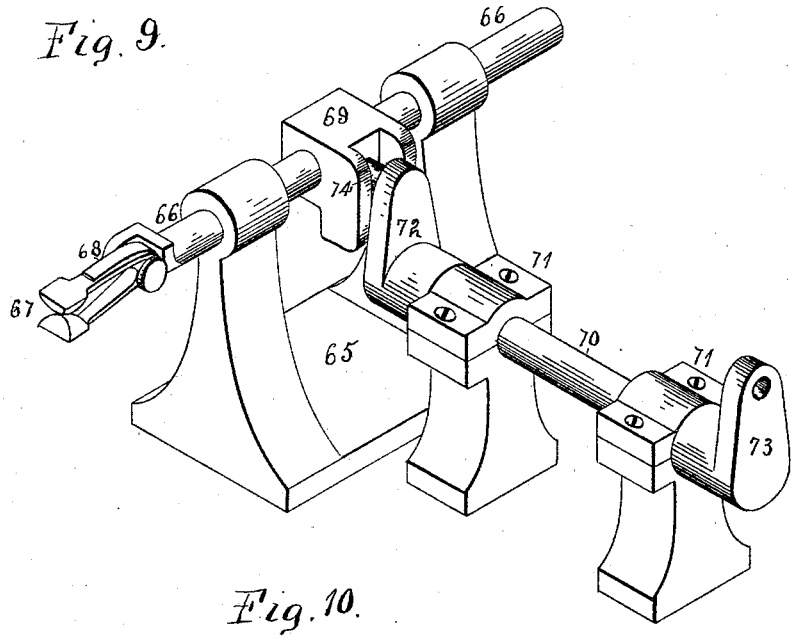
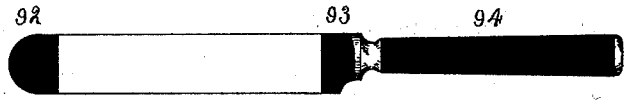


Fig. 10.



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UNITED STATES PATENT OFFICE.

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KNIFE-BURNISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 526,656, dated September 25, 1894.

Application filed February 28, 1894. Serial No. 501,883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. KELLEY, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Knife Burnishing Machines, of which the following is a specification.

The object of this invention is to construct a machine for burnishing knives, and consists of a reciprocating burnisher for the tip of the blade, oscillating burnishers for the eye brow and a combined reciprocating and oscillating burnisher for the handle portion, these various burnishers having a connection with suitable driving power which imparts the proper movements thereto.

This invention further consists in a holder for the knife operated upon and made movable bodily.

In the accompanying drawings, Figure 1, is a plan view of a machine embodying my improvements. Fig. 2, is a front elevation. Fig. 3, is a front elevation in which the burnishers, knife holder, and the parts for operating the same, located on the upper surface of the bed of the machine have been removed. Fig. 4, is a right-hand side elevation. Fig. 5, is a left-hand side elevation. Fig. 6, is an isometrical representation of the knife holder. Fig. 7, is an isometrical representation of the oscillating burnishers for the eye brow of the knife. Fig. 8, is an isometrical representation of the combined reciprocating and oscillating burnisher for the handle of the knife. Fig. 9, is an isometrical representation of the reciprocating burnisher for the point of the knife. Fig. 10, is a representation of a knife showing its point, eye brow and handle burnished.

To the upper face of the bed of the machine 1, and to the rear side thereof are secured bearings 2, and 3, which support a shaft 4, carrying driving pulleys 5, and 6, which are loosely mounted thereon and constantly driven in opposite directions by a belt connection with the shafting, and between which is located a clutch movable into engagement with either pulley thereby forming a connection between the pulleys and their shaft.

A rod 7, extends parallel with the shaft 4, and is supported in bearings 8 and capable of a lengthwise movement therein and supports a yoke 9, which engages the clutch mechanism moving it out of engagement with the pulleys, and to one end of this rod is connected a bell crank 10, having a pivotal connection with a support rising from the upper face of the bed of the machine, and to the other arm of the bell crank is connected a rod 11, which extends to the front face of the machine and is provided with a knob by means of which it is moved in its lengthwise direction.

A shaft 12, is supported in bearings 2 and 13, and is located at right angles to the shaft 4, with which it has a connection through the medium of the miter-gears 14, and near the front end of this shaft inside of the bearing 13, is formed a worm 15. The end of this shaft outside of the bearing 13, is formed with an eccentric around which is connected a link 16, and the extreme outer end is provided with a wrist pin to which is connected a link 17.

A shaft 18, is supported in bearings 19, and supports a worm wheel 20, which is in engagement with the worm 15, from which it receives its motion and upon this shaft is located a bevel pinion 21, which meshes with the teeth of a bevel gear wheel 22, secured to the end of a shaft 23, which extends transversely of the machine and is supported in a bearing 24, at one end, the other end of this shaft being provided with a right-hand screw 25, and to this lengthwise shaft at its right hand end is secured a pinion 26, which meshes with the teeth of the bevel gear wheel 27, connected to the end of the shaft 28, which is supported at one end by a suitable bearing 29, its other end provided with a left-hand screw 30.

To the upper face of the bed of the machine is secured a bearing 31, which supports a short shaft to one end of which, is connected a gear wheel 32, the teeth of which mesh with the teeth of a toothed pinion 33, secured to the shaft 12, and to the other end of this short shaft is secured a crank head 34, which supports a wrist pin made movable to and from the center of the crank head and to this wrist pin is connected a pitman 35, which extends

through an opening 36, in the bed of the machine. From the under face of the bed depend brackets 37, which support a shaft 38, which extends transversely of the machine, and to its rear end is connected an arm 39, which has a connection with the lower end of the pitman 35.

To the front end of the shaft supported in the bearings 37, is connected an arm 40, to the free end of which is pivoted a link 41, the other end of which has a pivotal connection with a sliding bar 42, held in place by guides 43, secured to the under face of the bed of the machine, which is provided with an upward extension 44, having its end 45, provided with an elongated slot 46, extending in a horizontal plane. As the shaft 12, rotates, it imparts a rotary movement to the crank head 34, through the gear connection, and this movement of the crank head will impart an oscillatory movement to the arm 40, through the pitman connection and a reciprocating movement will be imparted to the guide 42, through the link 41, and arm 40, connection.

At Fig. 6, I have shown the device used for holding the knife to be burnished, and for stopping the movement of the machine after the knife has been burnished which consists of a base 47, from the upper face of which rises a support 48, and from the rear face of the support rises an overhanging arm 49, provided with a vertical screw threaded opening within which is placed a screw threaded shaft 50, having at its upper end a knob 51, for turning the same, and to its lower end between the upper face of the support and under face of the overhanging arm is secured a clamp 52. The knife to be burnished is placed between the meeting faces of the support and clamp resting against the adjustable gages 53, the neck of the knife seated upon a rest 54, secured to the side of the support 48.

To the under side of the base 47, is secured a dove tailed guide 55, which moves in a guide way 56, cut in the upper face of the base of the machine.

The right-hand screw 25, formed on the end of the shaft 23, passes through a screw threaded opening in the support 28, of the knife holder so that as the shaft 23, revolves the screw thread engagement with the support will move the knife support bodily in its guide way connection with the base of the machine for a purpose to appear hereinafter. This sliding movement of the knife support is utilized to automatically stop the running of the machine which is accomplished by the rod 11, passing through a perforated lug 57, extending from the side of the support 48, and upon the rod on each side of the lug are set screwed collars 58, so as to be adjustable along the length of the rod. As before described this rod has a connection with the clutch mechanism of the driving pulleys and if the screw 25, be rotated in the proper direction the knife support will be moved toward the rear of the machine which will bring the lug 57, in contact with the collar secured upon the rod in rear of the lug and the further movement of the knife support will move the rod toward the rear of the machine and its bell crank connection with the rod 7, will move the clutch mechanism from engagement with the pulley 5, which will stop the movements of the machine. The attendant by continuing the rearward movement of the rod 11, will force the clutch mechanism into engagement with pulley 6 which will rotate the parts of the machine in the opposite direction causing the knife support to move toward the front of the machine until the lug 57, engages the collar located on the rod in front of the lug which will move the rod forward breaking the frictional engagement with the pulley 6, stopping the rotation of the machine, and by drawing upon the rod a frictional contact will be made with the pulley 5, which will rotate the parts in the opposite direction which will move the knife holder toward the rear of the machine as first described.

At Fig. 7, I have shown the burnishers for burnishing the eye brow of the knife and which are located to the right-hand side of the knife support, and consists of bearings 59, secured to the upper face of the base of the machine and which support two shafts 60, having a connection through the medium of gear wheels 61, which are located between the bearings 59, the end of the lower shaft extending through the rear bearing and to which is connected an arm 62, the upper end having a connection with the link 17, and as the crank head rotates, the link connection with the arm 62, will impart an oscillatory movement to the lower shaft and by reason of its gear connection with the upper shaft a like oscillatory movement will be imparted to said shaft. Each of the shafts 60, is provided with a vertical lengthwise slot within which is located a burnisher 63, having a pivotal connection with the shaft and a bar spring 64, secured to the shaft presses the burnishers toward each other. As these burnishers remain stationary except as to the oscillatory movements, and as they must burnish the entire width of the knife, and the eye brow portion, is another reason for making the knife support movable thereby carrying the knife in the lengthwise direction of the shaft supporting the burnishers, and by the spring action of the burnishers the eye brow portion of the knife will be burnished, also a portion of the blade of the knife within the range of the burnishers.

At Fig. 9, I have shown an isometrical representation of the burnishers employed to burnish the end of the knife blade, and consists of a support 65, secured to the upper face of the base of the machine, within which is supported a shaft 66, capable of a lengthwise movement therein, one end supporting jaws 67, which act as burnishers, and which are held in a yielding manner by the action of the springs 68. These burnishers are held in

proper position by holding the shaft from rotation by having a feather connection with its support as shown at Figs. 2 and 5. A reciprocating movement is imparted to this shaft through the medium of a guide 69, secured to the shaft having its rear face vertically slotted. A shaft 70, is held supported by bearings 71 secured to the upper face of the base of the machine, and to the ends of which outside of the bearings are secured arms 72 and 73 standing in a vertical position, the upper end of the arm 72, having a stud 74, extending from its front face and located within the slotted face of the guide 69. To the upper end of the arm 73, is connected the end of the link 16, so that an oscillatory movement will be imparted to the shaft 70, which in turn will impart a reciprocating movement to the burnisher supporting shaft. These burnishers are located as shown at Fig. 1, and the end of the knife blade to be burnished is located between the burnishers so that both faces of the blade will be burnished at the same time, and the fact that the support for these burnishers remains stationary is a further reason for making the support for the knife movable in order that the full width of the blade may be burnished.

The burnisher for burnishing the handle of the knife is shown at Fig. 8, and consists of a head 75, which support radially sliding burnishers 76, each provided at its outer end with a stud 77, and to the inner face is secured a movable ring 78, having its outer periphery made in cam form upon which rest the studs of the burnishers. A lever 79, has a connection with this cam ring by means of which it is moved. The head 75, is provided with a central opening 80, said head being connected with a socket 81, by means of the rods 82, and to the end of this socket are connected curved bar springs 83, their free ends resting upon the studs 77, of the burnishers. The handle of the knife to be burnished is placed within the central opening of the head, and the cam ring moved so as to allow the burnishers to come in contact with the knife handle the bar springs holding them yieldingly in contact therewith, when a reciprocating movement will be imparted to the head carrying the burnishers moving them full length of the knife handle, and the mechanism for imparting this movement consists of a square shaft 84, having a connection with the socket 85, and with the upper slotted end of the reciprocating bar 42; this square shaft held in a horizontal plane by tubular socket 85, held in a support 86. This support has a dove tailed guide 87, fitted to move in a guide way 88, formed in the upper face of the base of the machine, and through this support the left-hand screw passes, so that as the screw rotates the support will be moved transversely of the machine in order that the handle of the knife may always remain centrally of the opening in the head 75, consequently the support for the knife and the support for the burnishers for the knife handle move in unison and as the reciprocating bar 42, has not this movement its upper slotted end permits the end of the square shaft 84, to move therein, and which is held in place by suitable washers on each side, and a nut 89, on its outer end.

It will be noticed that six burnishers are employed to burnish the handle of the knife, and as the handle of the knife remains stationary so far as rotary movement is concerned it will be necessary to impart a partial rotary movement to the burnishers in order that the entire surface of the knife handle may be burnished, and this I accomplish by providing the inner end of the socket 85, with teeth 90, extending in its lengthwise direction said teeth meshing with the teeth of a rack 91, located beneath the socket and as the support 86, moves bodily carrying the socket with it the socket will be partially rotated in its connection with the support.

By this construction of a machine I am able to burnish the end of the knife blade, the eye brow portion and the handle at a single operation, and stop the movements of the machine when the knife has been burnished.

At Fig. 10, is shown a knife the portion shown in black being the burnished surfaces, 92 being the end of the blade, 93 the eye brow portion and 94 the handle portion.

I claim as my invention—

1. In a knife burnishing machine, the combination of a knife holder, a reciprocating oscillatory burnisher for the handle of the knife, a burnisher for the eye-brow of the knife, a burnisher for the end of the knife blade, the knife holder and burnisher for the handle of the knife capable of a bodily sliding movement in unison, and means for operating the burnishers and imparting movement to the knife holder and burnisher.

2. In a knife burnishing machine, the combination of a knife holder capable of a bodily sliding movement, a burnisher for the end of the knife blade, a burnisher for the eye-brow of the knife, means for operating the burnishers and imparting movement to the knife holder, and means for automatically stopping the movements of the parts after the knife has been burnished.

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