(No Model.)

G. B. KELLEY.

BURNISHING MACHINE.

No. 493,033. Patented Mar. 7, 1893.

Fig. 1.

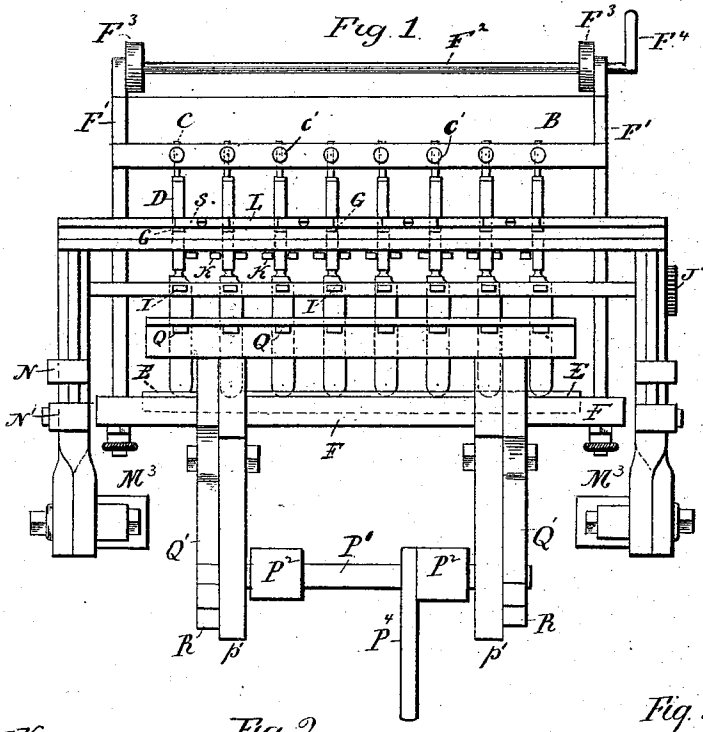


Fig. 5

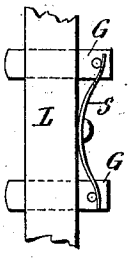


Fig. 4

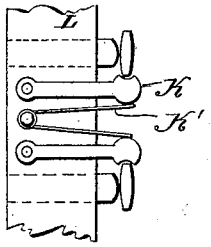


Fig. 2

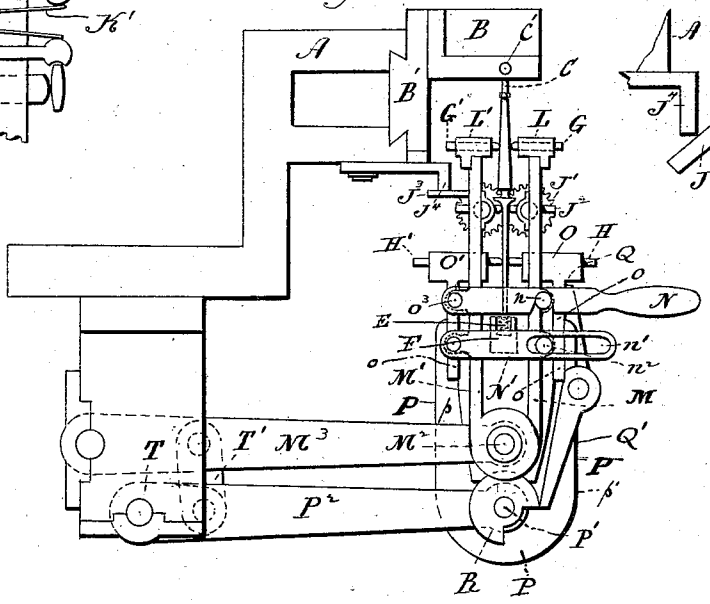
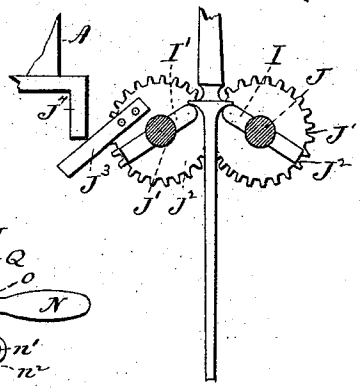


Fig. 3



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UNITED STATES PATENT OFFICE.

GEORGE B. KELLEY, OF ROCKFORD, ILLINOIS.

BURNISHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,033, dated March 7, 1893.

Application filed July 11, 1892. Serial No. 439,588. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. KELLEY, of Rockford, in the county of Winnebago and State of Illinois, have invented a new Improvement in Burnishing-Machines; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in front elevation of a machine constructed in accordance with my invention. Fig. 2, an end view thereof. Fig. 3, an enlarged broken view showing the eyebrow burnishers in their operative engagement with a knife. Fig. 4, is a broken plan view showing a pair of the pivotal spring actuated handle-edge burnishers. Fig. 5, a broken plan view showing one of the springs employed for forcing the handle burnishers inward.

My invention relates to an improved machine for burnishing knives, the object being to produce a simple and convenient device, having a large capacity for work.

With these ends in view, my invention consists in a machine having certain details of construction and combinations of parts as will be hereinafter described, and pointed out in the claims.

The machine-frame A, to which my improvements are applied, may be of any approved construction, and will not therefore be particularly described. It is provided at its upper end with a horizontal box B, secured to a slide B′, located in a vertical plane, and doweled into the machine-frame A, so as to slide horizontally thereon. The said box B, carries a horizontal series of regularly spaced independently movable sockets, or individual knife-holders C, which are slightly concaved at their lower ends to adapt them to receive the ends of the handles of the knives D, which are arranged vertically, with their handles uppermost. Each of the said sockets is provided with an adjusting-screw C′. The extremities of the blades of these knives are inserted into a grooved holder E, which is common to them all, and mounted in a channeled cross-bar F, arranged horizontally, and supported at its ends by two parallel vertical rods F′ F′, which are suspended from a horizontal shaft F^2, located above the machine-frame A, carrying at each end a cam F^3, resting upon the upper edges of the box B, and slide B′, and furnished at one end with a handle F^4, by means of which it is rocked to cause the said cams to lift through the rods F′ F′, or lower the cross-bar F, and hence the grooved-holder E, receiving the ends of the knife-blades. The said cams F^3, are virtually disks, each having a corresponding flat face. By turning the shaft F^2, by means of the handle F^4, so as to present the flat faces of the said disks to the edges of the box B, and slide B′, the cross-bar F, is allowed to drop down a little, thus securing enough clearance room to the ends of the knife-blades to be inserted into the groove of the holder E, and the ends of the knife-handles to be aligned with the sockets C. After the knives have been thus arranged, the shaft F^2, is rotated again so as to cause the cams to lift the rods F′ F′, and hence the cross-bar F, whereby the knives are raised and their handles forced into firm engagement with the sockets C, before mentioned. The said sockets C and grooved-holder E, thus combine to support the knives vertically in a straight series by the extreme ends of their handles and blades.

The machine is designed to receive at one time a series of eighteen knives, but obviously its capacity may be increased or diminished by making it larger or smaller. For convenience of illustration it is adapted as herein shown to receive eight knives at one time. All of the knives thus supported are simultaneously burnished on both sides, and on the edges of their handles, by a suitable arrangement of reciprocating burnishers. Thereto the machine is provided with two rows of handle-burnishers G G′, of which one row is located on one side of the vertical series of knives, and the other row on the other side of the same. These burnishers are arranged directly opposite each other in the same horizontal plane, the burnishers of one row co-operating with the corresponding burnishers of the other row, so that there is a pair of handle-burnishers for each knife. The machine is also provided with a double row of blade-burnishers H and H′, of which one row is located on one side of a series of

knives, and the other row on the other side of the same. These burnishers are also located opposite each other in the same horizontal plane, and there are two for each knife, the corresponding burnishers of the two rows cooperating in pairs.

The action of the handle and blade burnishers already described, is supplemented by the action of a double row of eye-brow burnishers, I and I′, which are located between the said handle and blade burnishers, and mounted so as to extend transversely through two shafts J and J′, respectively located on opposite sides of the series of knives, at points opposite each other. These burnishers are arranged in correspondence with the burnishers already described, and burnish the eye-brows of the knives, as shown by Fig. 3 of the drawings. Each of these shafts is provided at one end with a pinion J^2, the said pinions meshing into each other, so that the two shafts turn correspondingly. The shafts are turned by a knocker J^3, secured to one of the said pinions, and extending beyond the periphery thereof to engage with a stop J^4, forming a part of the machine frame A, when the shafts are lifted, as will be described later on.

The edges of the knife handles are burnished by means of pivoted handle-edge burnishers K, arranged in pairs, a spring K′, being located between the burnishers of each pair for pressing them against the edges of the knife-handles, as will be more fully described at another time.

The respective rows of handle-burnishers G and G′, are mounted in horizontal boxes L and L′, transversely chambered at regular distances to receive the said burnishers. The said boxes are attached at their ends to the upper ends of the arms of two pairs of vertical arms respectively located at the ends of the machine. Each of the said pairs of arms consists of an arm M and counterpart arm M′, both of which are swiveled upon a short shaft M^2, journaled in the outer end of an oscillating horizontal arm M^3, of which there is one and also a shaft at each end of the machine. By the oscillation of the arms M^3 M^3, the said pairs of arms, together with the boxes L and L′ carried by them, are vertically reciprocated. Each pair of arms is provided with a horizontal locking-lever N, which is hung by a pin o^3 to a lug offsetting from the arm M′ and notched to engage with a pin n, carried by the arm M, in a lug offsetting from it. Each pair of arms is also provided with a horizontal guard, consisting of a link N′, pivoted to a lug offsetting from the arm M′, and having its opposite end slotted as at n', to receive a pin n^2, carried by the arm M in a lug offsetting therefrom. When the locking-lever N, is lifted so as to be disengaged from the locking-pin n, the arms will fall apart by gravity, whereby the burnishers carried by the boxes L and L′, will be separated.

In explanation of the statement just made that the arms will fall apart by gravity, attention is called to Fig. 2 of the drawings, in which it will be noted that the main portions of the said arms lie on opposite sides of a vertical plane passing through the horizontal shaft M^2 on which they are hung, and that their upper ends are weighted by the boxes L L′, so that just as soon as they are freed, they will quickly fall apart by gravity, nor will they stay in place except as held there by the locking-lever N. At this time the guard N′ prevents the arms from falling too far apart. On the other hand, when the locking-lever N, is engaged with the pin n, the arms are held up in their operating positions, in which the rows of burnishers G and G′, are brought close together, so as to engage with the handles of any knives that may be in the machine.

The shafts J and J′ carrying the eye-brow burnishers I and I′, as before stated, are journaled at their ends in the respective members of the two pairs of arms just described, and partake of their reciprocating movement.

The respective rows H and H′, of the burnishers are mounted in horizontal boxes O and O′, furnished with regularly spaced transverse chambers, and constructed with depending webs o o, connected with the arms of two yokes P, located, as herein shown, between the respective pairs of hinged arms already described, and mounted on the ends of a horizontal shaft P′, which is journaled in the outer ends of two levers P^2 P^2 arranged to oscillate with the levers M^3 M^3 before referred to, but having greater throw. The web o, of the box O′ is attached to the inner arm p, of each of the said yokes, while the web o, of the box O, is secured to the upper arms Q Q of two two-armed levers respectively pivoted upon the outer arms p' of the two yokes, the said arms p' being shorter than the arms p before referred to. The lower arms Q′ Q′ of the said two-armed levers, are respectively arranged for engagement with cams R R, mounted upon the extreme ends of the shaft P′, which is furnished with a manual or hand-lever P^4, whereby it is rotated, to bring the drops of the said cams under the arms Q′ Q′ of the said two-armed levers, and to move the said drops of the cams out of line with the said arms. When the drops of the cams are brought under the said arms, they will rock on their pivots, their lower ends moving inward, and their upper ends moving outward, whereby the box H, is separated from the box H′ and space secured between them for charging or discharging the knives. But when the cams are turned to throw the said two-armed levers in the opposite direction, the boxes H and H′ are brought into position for the operation of the burnishers carried by them upon the knife blades. Normally the said yokes P P are supported in the upright position in which they are shown in Fig. 2 of the drawings.

The handle-edge burnishers shown by Fig.

4 of the drawings are mounted either upon the box L or L'. As shown by the said figure they are mounted upon the box L, a broken portion whereof is represented.

The burnishers G and G' and H and H', are pressed inward upon the knives by means of springs S, the application of which is illustrated by Fig. 5 of the drawings, each spring being applied to two burnishers of the same row. The particular construction of the burnishers may be varied as desired.

It will be clear that when the arms M^3, M^3 and P^2 P^2 are oscillated, all of the burnishers must be moved up and down on the knives, the handles and blades whereof are thus burnished on both sides simultaneously. If desired, the oscillating arms may be coupled together, as indicated by Fig. 2 of the drawings, by a crank T, and a link T', but that is not essential, although such a construction might be found convenient in timing the machine.

It is apparent that in carrying out my invention, some changes in the construction and arrangement of parts may be resorted to, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations therein as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremites, two rows of handle-burnishers respectively arranged to have a series of knives so held introduced between them, two rows of blade-burnishers correspondingly arranged, and means for reciprocating the said burnishers, substantially as set forth, and whereby the opposite sides of all of the knives are simultaneously burnished.

2. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremities, two rows of handle-burnishers arranged to have a series of knives so held introduced between them, two correspondingly arranged rows of blade-burnishers, two correspondingly arranged rows of eye-brow burnishers, and means for reciprocating the said burnishers, substantially as set forth, whereby the opposite sides of the knives are simultaneously burnished.

3. In a machine for burnishing knives, the combination with the frame thereof, of a series of holders for receiving corresponding ends of the knives, a movable holder adapted to receive the opposite ends of all of the knives, means for operating the holder last mentioned, handle and blade burnishers, and means for reciprocating the same, substantially as set forth, and whereby both sides of all of the knives are simultaneously burnished.

4. In a machine for burnishing knives, the combination with the frame thereof, of a series of independent holders for receiving the extremities of the handle-ends of a series of knives, a grooved holder for receiving the extremities of the blades of all of the knives, rods attached to the ends of the said grooved holder, and to a shaft, cams mounted on the said shaft, and a manual for rotating the said shaft whereby the grooved holder is raised and lowered by the said cams; blade and handle-burnishers, and means for reciprocating the same in contact with the knives, substantially as set forth.

5. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremities, two rows of handle-burnishers respectively arranged to have a series of knives located between them, two pairs of vertically arranged arms for supporting the said burnishers, and means for reciprocating said arms, substantially as set forth.

6. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremities, two rows of eye-brow burnishers arranged to have the knives introduced between them, and mounted in parallel shafts geared together at one end by pinions, and means for rotating the said shafts for imparting a rocking movement to the said burnishers, substantially as set forth.

7. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremities, two rows of handle-burnishers, arranged to have a series of knives introduced between them, two rows of correspondingly arranged eye-brow burnishers, two pairs of hinged arms carrying the said handle and eye-brow burnishers, and means for reciprocating the said arms, substantially as set forth.

8. In a machine for burnishing knives, the combination with the frame thereof, or holders for holding a series of knives by their extremities, two rows of burnishers arranged to have a series of knives introduced between them, two pairs of hinged arms carrying the said rows of burnishers, means for reciprocating the said arms, a locking lever for each pair of arms, whereby they are locked with the burnishers in their operative positions, and a guard for each pair of arms, whereby their undue separation when unlocked is prevented, substantially as described.

9. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremities, two rows of blade-burnishers arranged for the introduction of a series of knives between them, two yokes each provided with a two-armed lever, one of the said rows of burnishers being attached to the corresponding arms of the yokes, and the other to the uppermost arms of the said two-armed levers which are pivoted to the yokes; means for reciprocating the yokes, two cams ar-

ranged for engagement with the lower arms of the said two-armed levers respectively, and means for rotating the said cams, whereby the row of burnishers carried by the upper arms of the said levers is held in position for operation or allowed to drop away from the other row of burnishers, substantially as set forth.

10. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremities, two rows of handle-burnishers arranged for the introduction of the series of knives between them, two pairs of hinged arms for carrying the said burnishers, two rows of blade-burnishers arranged for the introduction of the knives between them, two yokes each having a pivotal two-armed lever, for carrying the respective rows of blade-burnishers, means for locking the hinged arms in their operative positions and allowing them to fall apart, means for operating the two armed levers of the yokes, whereby the row of burnishers carried by the said levers is swung toward and away from the corresponding row of burnishers, and means for reciprocating the said hinged arms and yokes, substantially as set forth.

11. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremities, and pivotal, spring-actuated, handle-edge burnishers arranged in pairs between the knives, substantially as set forth.

12. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremities, two rows of burnishers arranged for the introduction of a series of knives between them, two boxes in which the said burnishers are mounted, and springs applied to the boxes and engaging with the burnishers for forcing them inward to do their work, substantially as set forth.

13. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremities, two rows of handle-burnishers, two pairs of hinged arms for carrying the same, two rows of blade-burnishers, two yokes for carrying the same, two oscillating levers respectively connected with the pairs of hinged arms for reciprocating the same, and two oscillating levers respectively connected with the yokes for oscillating the same, substantially as set forth.

14. In a machine for burnishing knives, the combination with the frame thereof, of holders for holding a series of knives by their extremities, two parallel rows of handle-burnishers, two transversely chambered boxes for the same, two pairs of hinged arms to which the said boxes are attached, two parallel rows of blade-burnishers, two transversely chambered boxes in which the same are mounted, two yokes to which the boxes last mentioned are secured, and means for reciprocating the said hinged arms and yokes, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEO. B. KELLEY.

Witnesses:
LEVI S. FULLER,
JOHN H. WARREN.