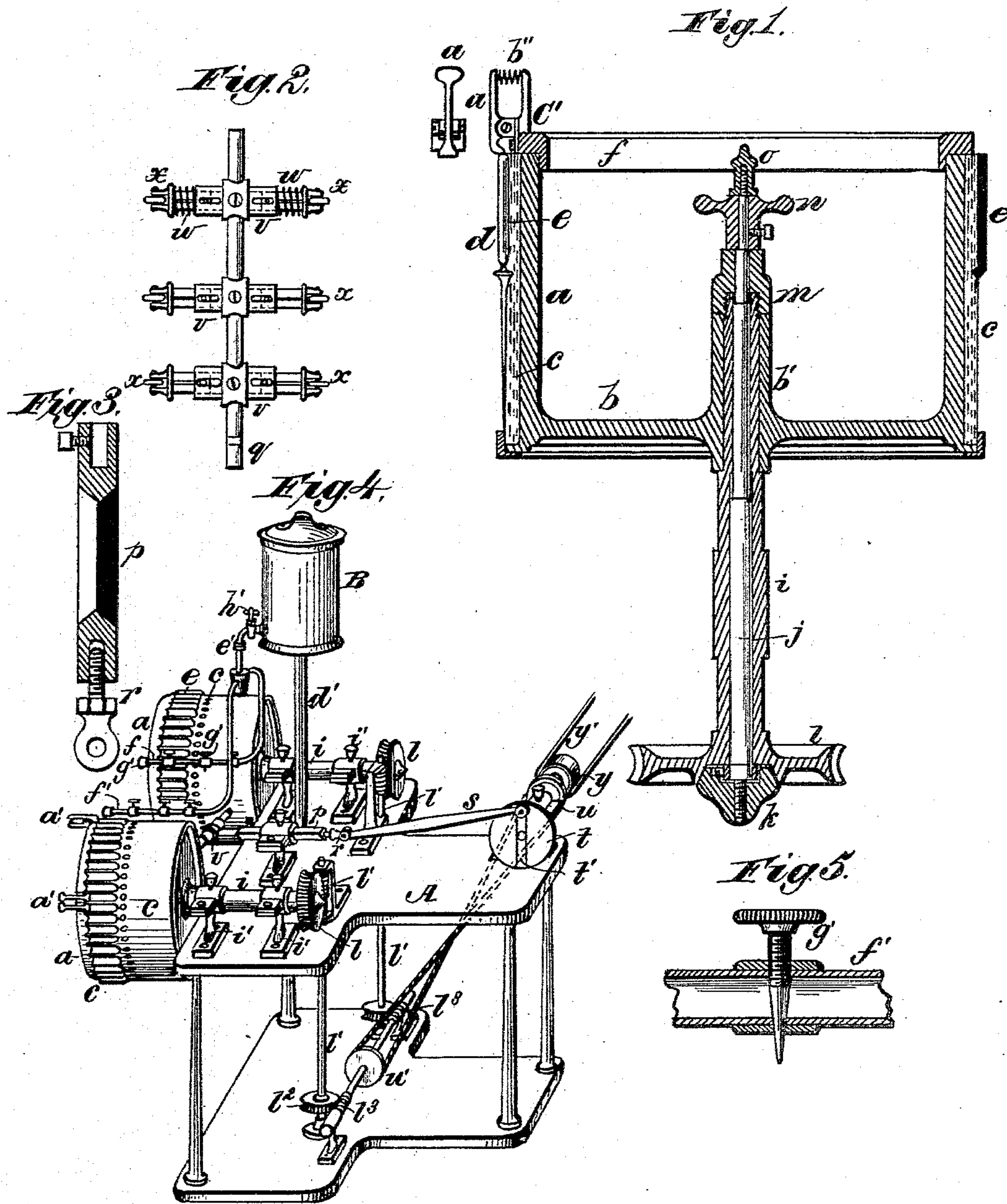


(No Model.)

G. B. KELLEY.
BURNISHING MACHINE.

No. 356,842.

Patented Feb. 1, 1887.



Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE B. KELLEY, OF ROCKFORD, ILLINOIS, ASSIGNOR TO THE ROCKFORD SILVER PLATE COMPANY, OF SAME PLACE.

BURNISHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 356,842, dated February 1, 1887.

Application filed September 18, 1886. Serial No. 213,938. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. KELLEY, residing at Rockford, in the county of Winnebago and State of Illinois, and a citizen of the United States, have invented certain new and useful Improvements in Burnishing-Machines, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of the drum or cylinder and its shafts; Fig. 2, a detail showing the construction and application of the burnishers; Fig. 3, a detail of the angular portion of the burnishing-rod with its sides partly broken away at the ends; Fig. 4, a perspective view, and Fig. 5 detail of a drip-faucet. Fig. 4 is on a reduced scale.

The object of this invention is to provide a machine in which the articles to be burnished can be easily attached and detached, to make the machine continuous in its operation, and to generally improve its construction and operation.

The nature of my improvements will be found embodied in the claims.

In the drawings, A represents the bed-plate; A', the base-plate; B, a liquid-reservoir; *a b b'*, the cylinder or drum; *c*, elastic or rubber covering; *d*, a table-knife in position; *e*, sockets or holes for the reception of the articles to be burnished; *f*, the upper or inner ring of the cylinder; *g*, the outer ring, having a flange, *h*; *i j*, shafts; *k*, friction-clutch; *l l'*, worm-wheels; *l' l'*, worms; *m*, shaft-cap; *n*, hand-wheel; *o*, screw-cap; *p*, angular section of the burnishing-shaft; *p'*, its supporting bracket or box; *q*, section of burnishing-shaft carrying the burnishers; *r*, adjustable connection for the pitman; *s*, crank-wheel having an adjusting-groove, *t*; *u u'*, cone-pulleys; *v*, arms or sockets for attaching the burnishers to their bar; *w*, springs; *x*, movable shafts or spindles carrying the burnishing-tools; *y*, power shaft and pulley; *y'*, belt; *a' b'' c'*, spring-clips for holding the upper or outer end of the articles to be burnished; *d'*, support for reservoir; *e'*, pipe from reservoir, having branches *f'*; *g'*, drip-faucets; *h'*, cut-off valve or stop.

The bed-plate A can be made in the form shown or in any other suitable form, and it is to be connected to or with the base-plate A',

as shown, or to any suitable supporting-table or frame-work, and it will be readily understood that the machine may be operated when in either a vertical or horizontal position or at any intermediate angle.

The drum or cylinder *a* is preferably cast in the form shown, with its supporting-hub *b'* projecting inwardly. The outer end is provided with a band, *f*, which partly holds the elastic rubber or bed in position, and to which the clips or clamps *a' b'' c'* are attached. These clips are made as shown in Fig. 1, the part *a'* being pivoted and given a proper pressure to hold the end of the article by the spring *b''*, which bears against the arm or projection *c'*, which is rigidly attached to the ring *f*. The inner end of the cylinder is provided with a metal ring, *g*, which has a flange, *h*, projecting slightly above the lower end of the rubber or other elastic bed.

The knives *d*, or other articles to be burnished, have their points inserted under the flange *h* and their upper ends clamped and held by the clamp *a'*. The spring *b''* allows the arm *a'* to be opened for the purpose of inserting and taking out the articles.

The bed *c* is made of a continuous rubber band entirely surrounding the cylinder *a*, and provided with suitable molds or recesses, *e*, to receive projecting portions of the articles to be burnished. These molds or recesses will vary according to the shape or contour of the articles to be burnished, the form shown being adapted to table or case knives. Different rubber beds may be applied to the same cylinders; but ordinarily it will be preferable to have complete cylinders adapted to the different articles to be burnished where there is any considerable difference in shape or length.

The flange *h*, with the ring *g*, is usually made adjustable, so as to lap more or less over the cylinder, and removable so that the covering *c* may be changed without removing the ring *f*, and for this purpose the projecting flange at the lower or inner end of the cylinder is omitted and the inner portion of the ring *g* made wider and provided with any suitable attaching and adjusting devices; but this will not be necessary when only one kind of article is to be burnished. The cylinders *a* are primarily supported upon the shafts *i*,

which are hollow, and through which the shafts *j* pass.

The worm-wheels *l* are attached to or made a part of the shafts *i*, and the outer end of each shaft is provided with a beveled recess to receive the friction-clutch *k*, which has a corresponding bevel. The friction-clutch is attached to the shaft *j* by means of a screw, so that it can be thrown into or out of operation by turning the hand-wheel *n*, which is attached thereto at or near the opposite end, and held in place by the screw-cap *o*, which may also be used to throw the clutch into or out of action. The shaft *i* is also provided with a cap, *m*, against which the hand-wheel *n* bears, and which prevents the cylinder from getting out of position, and, being provided with a screw, it is made to clamp against the hub *b* of the cylinder, and thereby compel the rotation of the cylinder with the shaft. The shaft *i* is supported in the brackets or bearing-boxes *i'*, and the shaft is reduced in diameter, as is shown in Fig. 1, at its bearing-points, and is provided with shoulders, so that the shaft *i* does not have any endwise movement. The inner ends of these shafts are provided with worm-wheels *l*, which are driven by the worms *l'*. These worms are supported in suitable bearings, or by the bed-plate through which they pass, and between this and the base-plate they are provided with worm-wheels *l''*, operated by secondary worms *l'''*, which are driven by the cone or conical pulley *u'*, which is connected with its opposite cone-pulley *u* by a cord or other suitable belt, the cone-pulley *u* being attached to the shaft of the driving-pulley *y*. By this arrangement a slow movement is given to the cylinders, and which movement can be varied by shifting the belt on the cone-pulleys, and the speed is increased or diminished according as it is desired to have the article to be burnished remain a greater or less time under the burnishing-tools.

The section *p* of the burnishing-shaft is made angular to prevent its rotating, and it slides in the bracket or box *p'*, which is or may be provided with a renewable bearing-sleeve. To the upper or outer end of this section the section *q* is attached by a set-screw or otherwise, and to this section *q* any desired number of burnishing-tools may be attached by collars and set-screws, as shown in Fig. 2. The parts are tubular, and, as shown, the arms *x* and springs *w* are both located within the tubular portion; but it will be readily understood that the arms *x*, which carry the burnishing-tools, may fit on the inside and the springs be located on the outside of the tubular arms *v*, which gives a steadier support to the arms *x* and a freer movement to the springs *w*.

For the purpose of preventing the arms *x* from getting entirely out of their sockets, the arm *v* may be slotted, as shown at Fig. 2, and a limit pin or projection be applied to the arm *x* in proper position; but as the arms *x* are always in the same relation to the cylin-

ders when in operative position, and the feed is from the side, they cannot get out of place when limit devices are omitted.

The burnishing wheels or tools in the outer ends of the arms *x* are of the usual construction, and they may be all alike, or they may be different, so that for knives or other articles having handles of wood or other non-metallic material suitable burnishers may be applied for burnishing or polishing such material, and the remaining burnishers be adapted to different material. They are separately adjustable along the section *q*, so that they will work in their proper positions, and a greater or less throw or limit of movement may be given them by moving the wrist-pin in the slot *t'* toward or from the center of the crank-wheel *t*, and the position of all may be changed by screwing the section *r* in or out, so as to lengthen or shorten the distance between the inner end of the pitman and the section *p*, which carries the section *q*. This change of position may be made at any time by simply unshipping the pitman from the wrist-pin or the wheel *t* and giving the screw-section *r* a suitable number of turns to obtain the desired position when the pitman is replaced. The groove *t'* is a dovetailed groove, and the wrist-pin is attached to a suitable block sliding in said groove, which may be provided with a set-screw or other device to lock or hold it in the desired position.

The liquid-reservoir *B* is supported by the standard or post *d'*, and it is elevated sufficiently to give a slight pressure in the tubes *f'*, and it is provided with a tube or pipe, *e'*, having a stop or cut-off valve or plug, *h'*. The pipe *e'* is forked, and its branches *f'* are located over the burnishing-tool, so that the drip from the faucets *g'* will be in the proper relation to the tools and the article being burnished. The tubes *f'* may be re-enforced by collars where the faucets *g'* pass through them, and the upper side of the passage is screw-threaded, as shown in Fig. 5, full size. The stems of the faucets are tapered to a point which extends below the tube and forms a guide for properly directing the drip, which drip may be increased, diminished, or cut off by turning the stem, as by turning it backward the screw portion of the stem lifts it so as to increase the drip-space, and turning it forward diminishes or closes the drip-space, so that the amount of drip can be easily regulated. The pipes *f'*, instead of being forked from the pipe *e'*, may lead direct from the reservoir, and additional pipes leading to other machines may be connected with the reservoir *B*. The liquid placed in the reservoir is such as is ordinarily used in burnishing.

It will be understood that by the use of the hand-wheel *n* either or both cylinders can be stopped without stopping the entire machine, and that when the friction-clutch is thrown off the cylinders may be revolved by hand in either direction, so as to enable the operator to discharge the entire number of articles bur-

nished and to refill the cylinder, if it is desired to so operate the machine; but the motion of the machine is such that the burnished articles may be taken out and fresh articles supplied without stopping the machine, so that its operation may be continuous, if it is desired to operate it in this manner.

The preferable size for a cylinder is one which will hold forty-eight articles to be burnished; but it is evident that the cylinders may be adapted to a greater or less number, as the elastic bed-plate and the springs *w* will cause the burnishing-tools to come in proper contact where the articles do not conform in line or shape to the surfaces of the cylinder.

By this construction I obtain a simple and efficient burnishing-machine, which can be operated either continuously or in any other manner, as may be desired, which is simple in its construction and efficient in its action, and the movements and operations are such that a number of machines can be operated by a single attendant, and thereby greatly reduce the labor and cost heretofore required in burnishing small articles.

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

1. The cylinder *a* and elastic covering *c*, adapted to receive articles to be burnished, in combination with the band *h* and spring clamping bars *a'*, substantially as specified.

2. In a burnishing-machine, the fixed knife-holder *h* and the spring clamping-holder *a'*, in combination with an intermediate elastic bed, substantially as described.

3. The combination of the cylinder *a* and elastic covering *c* with the ring *f*, having the spring clamping-holders *a'*, and the ring *g*, having the flange *h*, substantially as set forth.

4. The combination of the hollow shaft *i*, rotating knife cylinder or drum, hub *b'*, and cap *m* with the shaft *j*, friction-clutch *k*, and

means for connecting or releasing the clutch, substantially as specified.

5. The combination of the worm-wheels *l l'*, the worms *l' l'*, the cylinders *a a*, and their shafts *i* with the reciprocating burnishers, the conical pulleys *u u'*, and connecting-belt, substantially as described.

6. The combination of the revolving cylinders *a a* and means for clamping the articles to be burnished on the peripheries of the cylinders with reciprocating spring-pressed burnishers interposed between the two cylinders, substantially as described.

7. The combination of the revolving cylinders *a a* and means for clamping the articles to be burnished on the peripheries of the cylinders, the reciprocating shaft-sections *p q*, and the burnishers *x*, extending laterally in opposite directions from the sides of the shaft-section *p* and arranged between the two cylinders, substantially as described.

8. The tubular sections *v*, separately adjustable along the length of the rod *q*, and in combination therewith, substantially as set forth.

9. The combination, with the revolving cylinder *a*, means for clamping on the periphery thereof the articles to be burnished, and the reciprocating burnishers, of the liquid-reservoir *B*, the pipe *f'*, leading therefrom and extending above the burnishers, and the tapering screw-stem *g'*, extending through the pipe and projecting below the latter to guide and direct the drip, substantially as described.

10. The reservoir *B*, pipe or pipes *f'*, and drip-faucets *g'*, in combination with the cylinders *a* and reciprocating burnishers *x*, substantially as specified.

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Witnesses:

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