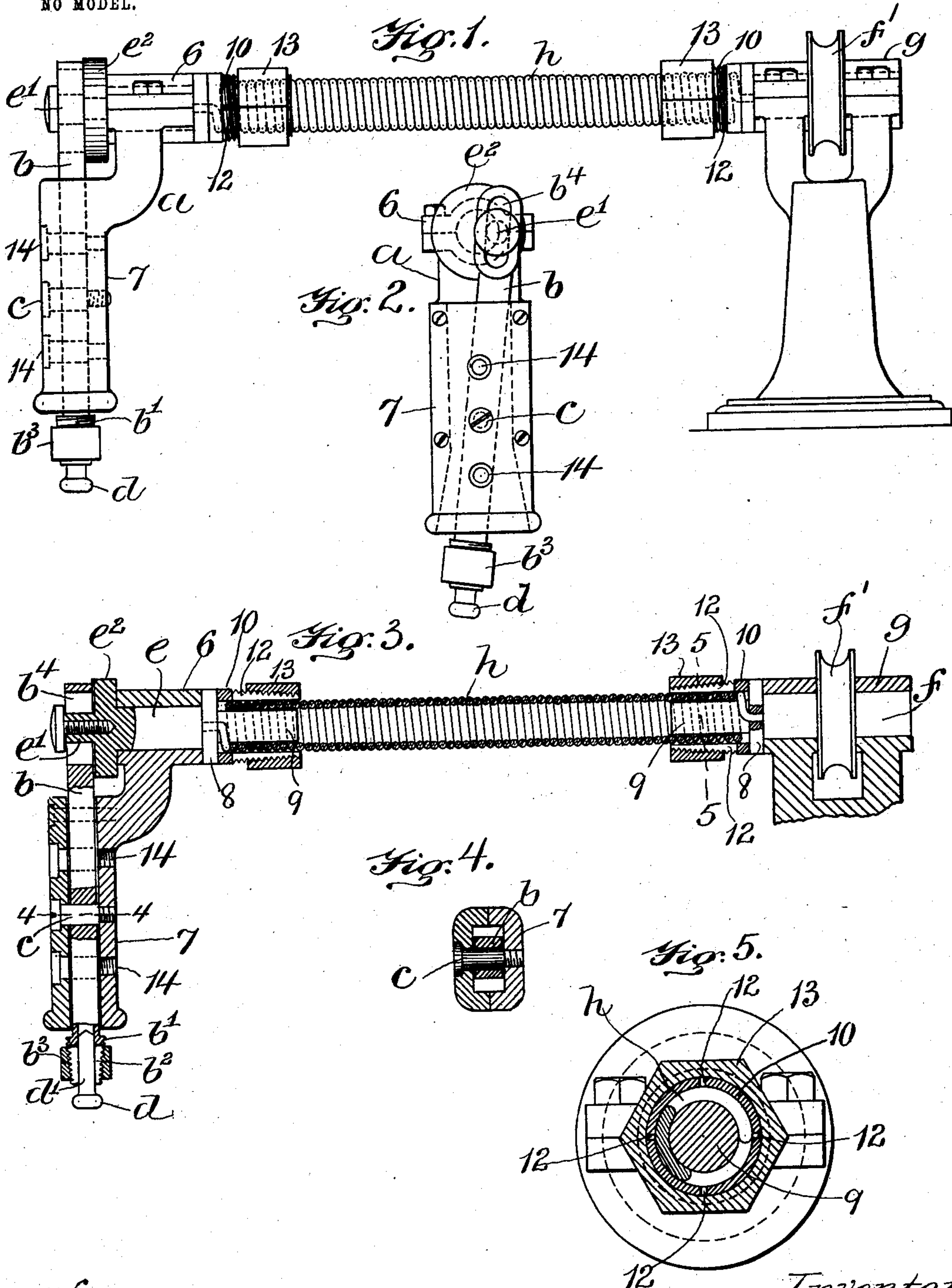


No. 751,506.

PATENTED FEB. 9, 1904.

F. K. HATFIELD.
BURNISHING MACHINE.
APPLICATION FILED APR. 1, 1903.

NO MODEL.



Witnesses.
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BURNISHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 751,506, dated February 9, 1904.

Application filed April 1, 1903. Serial No. 150,525. (No model.)

To all whom it may concern:

Be it known that I, FRANK K. HATFIELD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and
5 useful Improvements in Burnishing-Machines, of which the following is a specification.

This invention has for its object to provide a machine for burnishing metal surfaces in such manner as to imitate closely the rubbing
10 motion of a hand-tool commonly used for this purpose and also adapted to perform the operation of burnishing much more rapidly than by hand.

The invention consists in the improvements
15 which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a burnishing-machine embodying my invention. Fig. 2 represents an
20 end elevation of the outer portion of the same. Fig. 3 represents a longitudinal section. Fig. 4 represents a section on line 4 4 of Fig. 3. Fig. 5 represents a section on line 5 5 of Fig. 3.

The same reference characters indicate the
25 same parts in all the figures.

In the drawings, *a* represents a portable head, comprising a bearing portion 6 and an arm 7, projecting at an angle from the bearing
30 portion and formed externally as a handle adapted to be grasped in the hand of the operator. The arm portion 7 is hollow, and through it extends a lever *b*, which is fulcrumed upon a pin or stud *c*, engaged with the arm portion 7. To the outer end of the
35 lever *b* is fixed a burnishing-tool *d*, which may be made of any suitable relatively hard material susceptible of a high polish, the mineral known as "bloodstone" being preferred.

The lever *b* is preferably provided with a clamping device adapted to engage the shank
40 *d'* of the tool *d*. To this end the outer end of the lever may be enlarged, as shown at *b'*, the enlarged portion being externally screw-threaded and provided with longitudinal slots
45 *b''*. With the externally-threaded portion is engaged an internally-threaded tapered nut *b'''*. When the nut is screwed home, it compresses the slotted portion of the enlarge-

ment, causing said portion to bind upon the
50 shank of the tool *d'*. The inner end of the lever *b* is provided with a longitudinal slot *b''*, which receives a wrist-pin *e'*, eccentrically mounted upon the driving-shaft hereinafter described, the rotation of said shaft causing
55 the wrist-pin to revolve about the axis of the shaft and oscillate the lever *b*, so that the burnishing-tool *d* is given a quick back-and-forth or oscillating motion.

The driving-shaft above referred to is com-
60 posed of the following parts, viz: first, an inner inflexible section *f*, journaled in a fixed bearing *g* and provided with a power-receiving member, such as a pulley *f'*; secondly, an outer inflexible section *e*, journaled in the bear-
65 ing portion 6 of the vertical head *a*, said section *e* having at its outer end a flange or enlargement *e''*, from the outer face of which the eccentric wrist-pin *e'* projects; thirdly, an intermediate flexible section *h*, which is preferably
70 a helically-coiled spring, one end of which is attached to the inner section *f* and the other to the outer section *e*. Each of the sections *f* and *e* is provided with a flange 8, to which the said spring is attached, and a reduced in-
75 ner portion 9, which enters the interior of the tube formed by the coiled spring. The spring is clamped upon the reduced portions 9 9 by means of clamping-sleeves 10 10, each of which
80 embraces an end portion of the spring and is externally tapered and screw-threaded, the tapered portions being provided with longitudinal slots 12. With said tapered and threaded
85 portions are engaged internally-threaded and tapered nuts 13, which when turned home compress the slotted portions of the sleeves 10 upon the portions of the coiled spring inclosed therein, thus binding said portions firmly upon
90 the reduced portions 9 of the shafts *e* and *f*.

It will be seen that when the inner section
90 *f* is rotated—for example, by means of a belt running from a driving-shaft onto the pulley *f'*—its rotation is communicated through the flexible section *h* to the outer section *e*, the
95 rotation of which is caused as above described to oscillate the lever *b* and burnishing-tool *d*. The flexible section *h* enables the operator, who grasps the handle portion of

the portable head, to move said head about over the work as may be desired, so that the tool may be applied to all parts of the surface to be burnished.

5 The length of the stroke of the burnishing-tool may be varied by shifting the fulcrum-pin *c* from one set of orifices in the arm or handle portion 7 to another, a series of pin-receiving orifices 14 being provided, said orifices being at different distances from the axis
10 of rotation of the shaft-section *e*.

It is obvious that the above-described machine may be used by dentists for polishing and burnishing teeth, either natural or arti-
15 ficial, and for producing other results which require the action of a rubbing-tool moving rapidly back and forth.

I claim—

1. A burnishing device comprising a port-
20 able head having a bearing portion and a handle portion, a lever extending through and fulcrumed in said handle portion and having a burnishing-tool at its outer end, and a driving-shaft adapted to oscillate said lever and tool,
25 said shaft having an inner section journaled in a fixed bearing and provided with a power-receiving member, an outer section journaled in said bearing portion and connected with said lever, and an intermediate flexible sec-
30 tion, permitting free movements of the head.

2. A burnishing device comprising a portable head having a bearing portion and a han-

dle portion, a lever extending through and fulcrumed in said handle portion and having a burnishing-tool at its outer end, and a driving-
35 shaft having an inner section journaled in a fixed bearing and provided with a power-receiving member, an outer section journaled in said bearing portion and provided with an eccentric wrist-pin located in a slot in the in-
40 ner end of the lever, and an intermediate flexible section.

3. A burnishing device comprising a portable head having a bearing portion and a han-
45 dle or arm portion, a lever extending through said arm portion, the said lever and arm portion having a plurality of sets of fulcrum-receiving orifices located at different distances from the bearing portion, a detachable fulcrum-pin adapted to engage either set of ori-
50 fices, and a driving-shaft adapted to oscillate said lever and tool, said shaft having an inner section journaled in a fixed bearing and provided with a power-receiving member, an outer section journaled in said head and con-
55 nected with said lever, and an intermediate flexible section, permitting free movements of the head.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANK K. HATFIELD.

Witnesses:

C. F. BROWN,

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