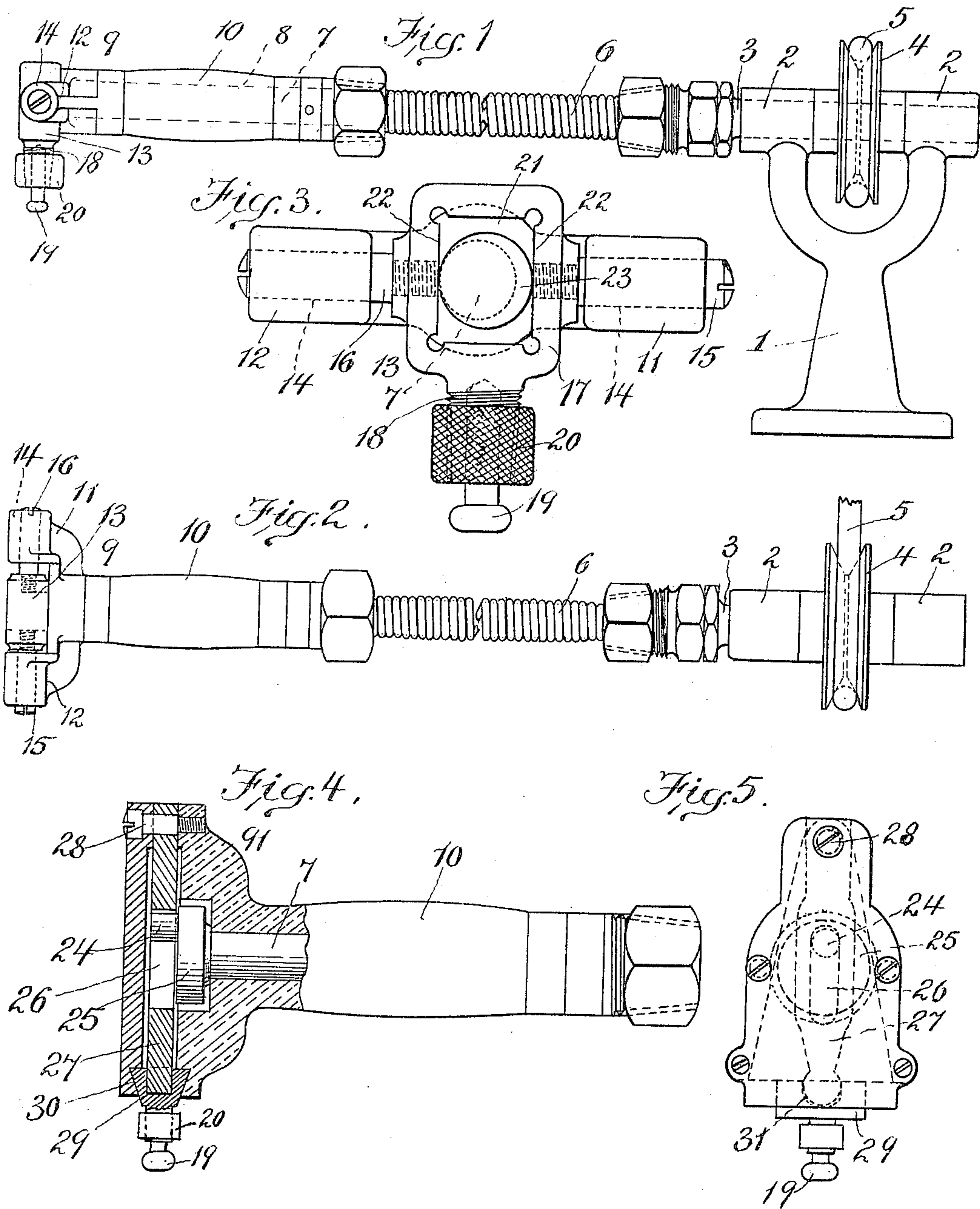


No. 818,167.

PATENTED APR. 17, 1906.

F. K. HATFIELD.
BURNISHING MACHINE.
APPLICATION FILED MAR. 9, 1905.



Witnesses:

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UNITED STATES PATENT OFFICE.

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BURNISHING-MACHINE.

No. 818,167.

Specification of Letters Patent.

Patented April 17, 1906.

Application filed March 9, 1905. Serial No. 249,171.

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 useful Improvements in Burnishing-Machines, of which the following is a specification.

This invention relates to machines for burnishing metal surfaces, &c., of the general type illustrated in my Patent No. 751,506, granted February 9, 1904, and is designed to provide a portable tool which is operated by power and is caused to travel in a straight line.

In the machine of the patent referred to the burnishing-tool is carried at the end of an oscillating lever and so is caused to swing in a path curved on the arc of a circle; but with the machine of the present invention the tool is carried by a holder which is mounted in rectilinear guides and is so connected with the operating mechanism as to be caused to reciprocate in said guides, and thereby to travel in a straight line, thus being adapted to operate more efficiently on plane and straight surfaces.

The invention consists in the novel improvements which I will now proceed to describe and claim and which are illustrated in the drawings forming a part of this specification, in which—

Figure 1 represents a side elevation of a burnishing-machine embodying my present invention. Fig. 2 represents a plan view of the same. Fig. 3 represents an end elevation, on an enlarged scale, of the portable head and tool as seen from the left of Fig. 1. Fig. 4 represents a side elevation, partly in section, of a modified construction of portable head and tool-operating mechanism. Fig. 5 represents an end elevation of the same as seen from the left of Fig. 1.

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

In the drawings, 1 represents a standard having bearings 2, in which is journaled a rigid shaft-section 3, driven by suitable power, as a pulley 4, engaged by belt 5. To the rigid shaft-section is connected a flexible shaft-section 6, connected to a second rigid shaft-section 7, journaled in a bearing 8 in a portable head 9. Thus far the construction is identical with that of the patent above referred to and needs no more detailed description.

The portable head (shown in Figs. 1, 2, and 3) has a handle portion 10, which is adapted to be grasped by the hand of the operator and which has formed extending through it in the direction of its length a bearing 8, in which the shaft-section 7 is journaled. Adjacent the end of the handle portion opposite that at which the flexible shaft-section is connected the head is formed with outwardly-extending arms 11 12, the ends of which project beyond the portable head in the direction of its length and are separated by an amount sufficient to accommodate a burnishing-tool holder 13. The ends of the arms are provided with internal bearings or guideways 14, located in a straight line, which are adapted to receive projections 15 16 on the tool-holder 13. The latter consists of a body portion 17, located between the ends of the arms 11 12, upon opposite sides of which are mounted the projections 15 16, consisting, preferably, of pins in screw-threaded engagement with the body portion and extending oppositely in line with each other through the guideways 14 in the arms. The tool-holder has a downwardly-extending split tubular socket 18, which receives a burnishing-tool 19 and is clamped about the shank of the tool by a nut 20.

In the body portion of the tool-holder is formed a central opening or slot 21, the sides of which constitute abutting surfaces or ways for engaging an eccentric 23 at diametrically opposite points on the circumference thereof. This eccentric is mounted upon the end of the shaft-section 7 and when the latter is rotated presses upon first one and then the other of the walls 22, causing the tool-holder to move from side to side in a line which is caused to be a straight one by the alinement of the projections 15 16 and the bearings 14.

In Figs. 4 and 5 the shaft 7 operates the burnishing-tool 19 through an eccentric crank-pin 24, connected to a flange 25, formed on the shaft and engaging in a slot 26 of a pivoted lever 27. This lever is mounted to oscillate upon a stud 28 in the portable head 91, and its free end is in engagement with a tool-holder 29, held in a guideway 30 in the portable head. Thus when the shaft is rotated the lever is oscillated and the tool-holder and tool caused to reciprocate in a straight line in the guideway, which is rectilinear. Any form of connection between the

free end of the lever and the tool-holder which will permit the lever to swing in an arc while the tool-holder moves in a tangential straight line may be provided; but the connection which I consider preferable is that here shown, wherein the lower end of the lever is given a circular curvature and is projected into a recess 31 of similar curvature formed in the holder.

The parts of this machine may be made of any desired size and proportions, and tools of varying sizes and characteristics may be used. Primarily the machine is designed for burnishing metal, and by using tools of the proper shape either wide flat surfaces or the corners of cylindrical surfaces of moldings, &c., may be polished. One field in which this machine might be used is in burnishing metal sheathing of ships, for which purpose a wide flat tool should be employed. Also, suitable abrading-tools might be attached to the holder and the device then used for smoothing and scraping the surfaces of various forms of woodwork, &c. The machine when properly proportioned and appropriate tools applied may also be used in dentistry for polishing teeth and fillings and for many other purposes.

I claim—

1. A burnishing-machine comprising a portable head having a handle portion and a rectilinear guide connected together, a completely-rotating shaft-section journaled in said handle portion, a burnishing-tool supported by said guide, and connections between the shaft and tool continuously in engagement therewith whereby the tool is reciprocated on the guide by rotation of the shaft-section.

2. In a burnishing-machine, a portable head comprising a handle portion, a rectilinear guideway supported by the handle adjacent one end thereof, a tool-holder mounted in said guideway, a tool carried by said holder, a bearing formed in said handle portion and extending longitudinally thereof, a completely-rotating shaft-section journaled in said bearing, and connections between the shaft-section and tool-holder whereby the latter is reciprocated by rotation of the shaft-section.

3. In a burnishing-machine, a portable head having a handle portion and a guide-

way connected together, a tool-holder mounted to slide in said guideway, a shaft journaled in said handle portion, an eccentric on said shaft, abutting surfaces formed on said tool-holder and arranged to engage the eccentric, and a tool carried by said holder.

4. In a burnishing-machine, a portable head having a handle portion and a connected arm formed with an internal guideway, a tool-holder having a guiding portion mounted to slide in said guideway, a shaft journaled in said handle portion, an eccentric on said shaft, abutting surfaces formed on said tool-holder and arranged to engage the eccentric at diametrically opposite points, and a tool carried by said holder.

5. In a burnishing-machine, a portable head having a handle portion and a pair of arms projecting from one end of the handle portion, the said arms being separated from each other at their ends and having internal bearings or guideways in alignment, a tool-holder having a body portion located between said arms and projections held in said guideways, a shaft journaled in said handle portion, an eccentric on said shaft, ways or abutting surfaces formed on the body portion of the tool-holder and arranged to engage diametrically opposite points of the eccentric, and a burnishing-tool carried by said holder.

6. A burnishing-machine having a portable handle portion, a guide rigidly connected to said handle adjacent its end and extended at substantially right angles to the length thereof, a tool-holder slidably mounted in said guide and arranged to reciprocate lengthwise therein, a burnishing-tool detachably mounted centrally on said holder, a shaft-section journaled axially in said handle portion, an eccentric thereon adjacent said guide arranged to rotate and thereby drive the tool-holder in opposite directions of reciprocation, and a flexible driving-shaft section connected to the aforesaid shaft-section.

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

FRANK K. HATFIELD.

Witnesses:

A. C. RATIGAN,
C. F. BROWN.