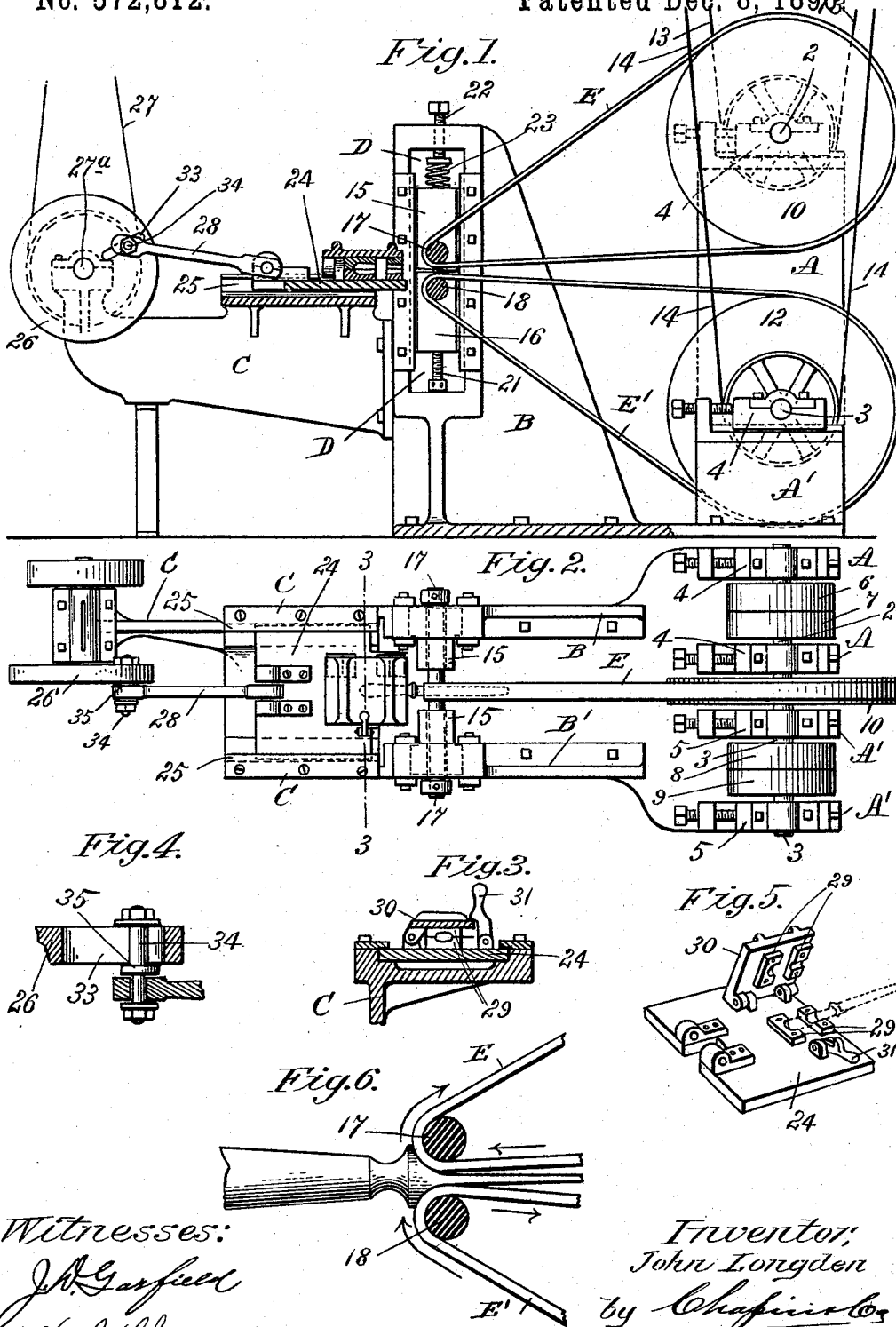


(No Model.)

J. LONGDEN.
BELT POLISHING FRAME.

No. 572,812.

Patented Dec. 8, 1896.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN LONGDEN, OF BAY STATE, MASSACHUSETTS.

BELT POLISHING-FRAME.

SPECIFICATION forming part of Letters Patent No. 572,812, dated December 8, 1896.

Application filed May 2, 1896. Serial No. 589,973. (No model.)

To all whom it may concern:

Be it known that I, JOHN LONGDEN, a citizen of the United States of America, residing at Bay State, in the county of Hampshire and State of Massachusetts, have invented new and useful Improvements in Belt Polishing-Frames, of which the following is a specification.

This invention relates to metal-polishing mechanism, and particularly to "belting-frames," so called, and has for its object the construction of a machine for polishing both sides of an article at the same time, whether said two sides are parallel or are in different planes; and the invention consists in the arrangement and construction hereinafter fully described and claimed.

In the drawings forming part of this specification, Figure 1 is a side elevation, partly in section, of a machine constructed according to my invention. Fig. 2 is a plan view of the same. Fig. 3 is a section taken on line 3 3, Fig. 2. Fig. 4 is a section on line 4 4, Fig. 1. Fig. 5 is a perspective view of a clamp for holding a piece to be operated upon by the machine. Fig. 6 is an enlarged view of the two adjustable belt-shafts in section, showing them adapted to the polishing of a table-knife blade.

Referring to the drawings, A, A', B, and B' represent perpendicular frame portions of a polishing-machine, and C a horizontal frame portion bolted to B and B'. On frames A A' are two driving-shafts 2 and 3, supported for rotation in horizontally-adjustable bearing-boxes 4 4 and 5 5. Each of said shafts 2 and 3 is provided with tight and loose pulleys 6 7 and 8 9, respectively, and said shafts 2 and 3 are offset and located one above the other, to the end that the belt-pulleys 10 and 12, located on the inner ends of each of said shafts 2 and 3, shall lie in the same vertical plane. Suitable driving-belts 13 and 14 engage said tight and loose pulleys on the said driving-shafts 2 and 3. Said frames B B' are provided with perpendicular openings D near the forward edges thereof for the reception of two bearing-boxes 15 15 and 16 16 for each of said shafts, which are movable vertically within said openings. Near the contiguous ends of the said boxes in openings D are located two shafts 17 and 18, which, as

shown in Fig. 2, extend transversely through said boxes and between the frames B and B'. Two polishing-belts E E' are applied to said pulleys 10 and 12 and said shafts 17 and 18, as shown. Said bearing-boxes 16 are restrained against lateral movement in the said openings D in the frames B B' by plates 19 20, bolted onto the inside and outside faces of the said frames. The upper ends of said plates, where they lie opposite the said boxes 15, do not fit as closely the sides of said boxes as they do against the sides of box 16, thereby permitting to said boxes 15 and the shaft 17 therein a little play between the opposite faces of the openings D, whereby the surface of said polishing-belt E on said shaft 17 may adapt itself to the tapered surface of a piece of work, like the blade of a knife, for instance. The said box 16 is adjusted vertically within said opening D by the screw 21, which engages with a suitably-threaded hole in the lower end of said box, and whose head has a bearing on the bottom of said opening.

Pressure at the will of the operator may be applied to the boxes 15, in which shaft 17 runs, by turning down the screw 22 on the top of the frames B B', between the inner end of which and the top of said box the spring 23 is located and which is compressed by the turning in of said screw through said frame.

A work-carrying table 24 is located on frame C. Said table is shown in perspective in Fig. 5, a clamping device for holding a table-knife being shown thereon in an open position. Said table is supported in two slideways 25 for reciprocating motion toward and from the shafts 17 and 18, which is imparted thereto by the crank-wheel 26, revolved by the belt 27, running over a suitable pulley on the crank-shaft 27^a, and a connecting-rod 28 from said crank-wheel to said work-holding table.

The clamping device above mentioned consists of supports 29, suitably formed for holding a table-knife by the handle thereof, and a hinged part 30, suitably formed to correspond to the supports 29 for holding said handle. One of these articles having been placed on said supports 29 the part 30 is swung over to a horizontal position, inclosing said handle, and the locking-lever 31, hinged to said table, is moved to a perpendicular position, the projection 32 thereon fitting closely over

the upper edge of said part 30, as seen in Fig. 3, and securely holding the knife therein. The height of said clamping device above the table 24 is such that the blade of a knife clamped therein will lie in position to be inserted between the belts E E' as they pass over the shafts 17 18. Said crank-wheel 26 is provided with a slot 33 therein, through which passes the threaded end of a stud 34, having a shoulder 35 turned thereon for bearing against the surface of the crank-wheel. (See Fig. 4.) A nut on the opposite surface of said crank-wheel serves to secure said stud at any convenient point within said slot. The degree of movement of the sliding work-holding table is controlled by the placing of the said stud in said slot at any desired place therein. Fig. 6 shows the position of a knife-blade at the limit of forward movement thereof between said belts. When said machines are used for finishing knife-blades, the diameters of the two shafts 17 and 18 are made small enough so that the curve of the belts around said shafts will be substantially the same as the curve forming the neck of the blade, and the said neck portion finished when the blade is finished instead of by two separate operations.

In operating this machine on table-knives, for instance, a knife is clamped by its handle in the clamping device on the sliding table 24, and the stud in the crank-wheel loosened and set at such a distance from the center of the crank-shaft as will give a movement to said sliding table equal to the length of the knife-blade to be finished. Said stud is then secured in the crank-wheel and the belts are then shipped onto the tight pulleys of the shafts 2 and 3 and the belts E E' caused to revolve rapidly, the belt on the crank-shaft meanwhile imparting rotary motion to the crank-wheel, whereby said work-holding table carrying the knife clamped thereon is given a reciprocating motion to and from the said belts E E', and said knife-blade is passed in and out therebetween until it is properly finished. Said knife-blade being tapered in two directions, from neck to point and from

the back to the cutting edge thereof, it is seen that by the construction of the within-described mechanism, that is, one fixed shaft and one shaft which can adjust itself to a surface lying in a plane not parallel with the plane of the work in contact with the fixed shaft, means are provided herein for polishing much more cheaply and rapidly many articles which now have to be handled several times before they are completed. Furthermore, one man can run several of these machines, or as many as he can start up while a knife-blade is being finished on the first one started.

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

1. A belt polishing-frame-consisting of two polishing-belts one of said belts running on two rigidly-held axes, and the other of said belts running on one fixed and one movable axis, said movable axis and one of said fixed axes being in close proximity to each other, a work-holding table and means for securing a piece of work thereon, and means for imparting a reciprocating movement to said table, toward and from the said two axes lying in proximity to each other, substantially as described.

2. In a belt polishing-frame two oppositely-running belts, each provided with a driving-shaft and a driven arbor which are respectively adjustable in horizontal and vertical directions, said arbors running in close proximity to one another, combined with a work-holding table which has a reciprocatory movement toward and from said last-named arbors, and work-clamping devices on said table, and a connecting-rod engaging with one end of said table and with a slotted crank whereby the degree of movement given to said table may be varied, combined with means for rotating said belts and said slotted crank, substantially as described.

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Witnesses:

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