(No Model.) 2 Sheets—Sheet 1.

G., J. G. & M. O. REHFUSS.

BUTTON TURNING LATHE.

No. 540,876. Patented June 11, 1895.

fig. 1.

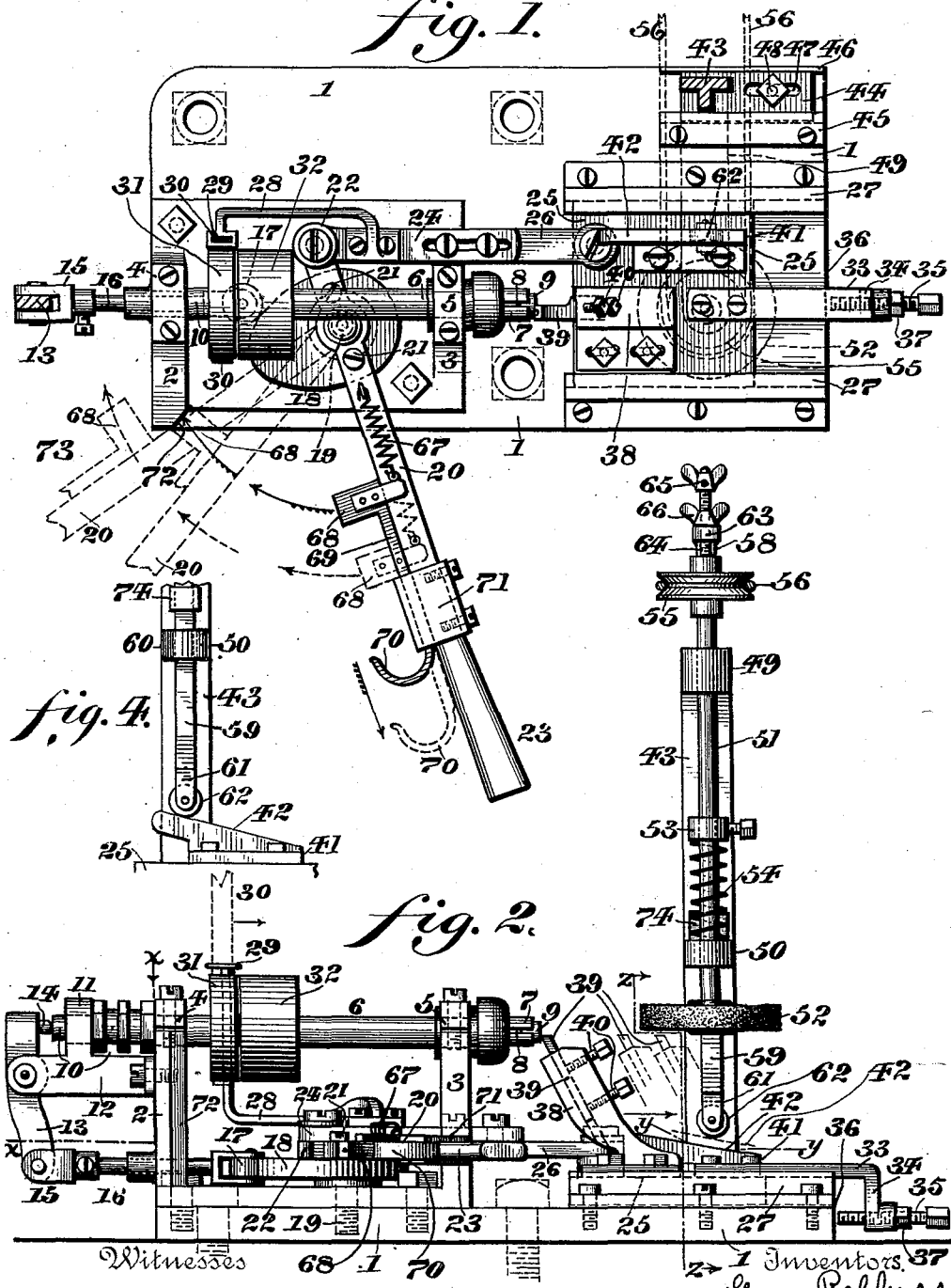

fig. 4.

fig. 2.

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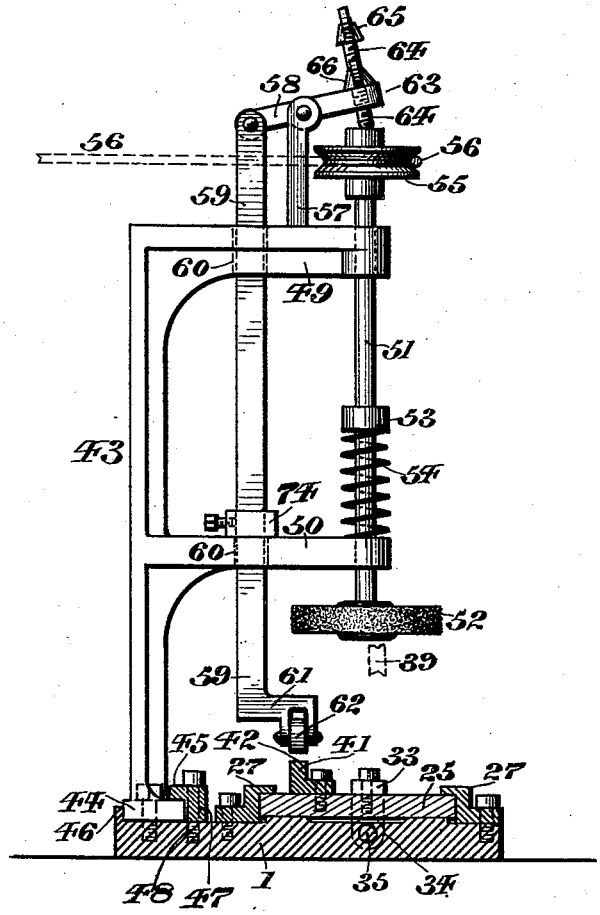
Fig. 3.



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UNITED STATES PATENT OFFICE.

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BUTTON-TURNING LATHE.

SPECIFICATION forming part of Letters Patent No. 540,876, dated June 11, 1895.

Application filed December 29, 1894. Serial No. 533,271. (No model.)

To all whom it may concern:

Be it known that we, GEORGE REHFUSS, JOHN GEORGE REHFUSS, and MARTIN O. REHFUSS, citizens of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Button-Turning Lathes, which improvement is fully set forth in the following specification and accompanying drawings.

Our invention consists of a novel construction of a button turning lathe, in which the movement of a single lever throws all the parts into or out of operative position, a movement of said lever in one direction serving to start the lathe, close the jaws of the chuck, and present the cutter to the revolving button held in said jaws, while a movement of said lever in the opposite direction serves to stop the lathe, open the chuck and move the cutter away from the latter, and a further movement of said lever in the same direction causes the cutter to be sharpened, the extent of movement of all of the above parts being capable of ready adjustment.

It further consists of novel details of construction, all as will be hereinafter set forth.

Figure 1 represents a plan view of a button-turning lathe embodying our invention, certain parts being shown in section on lines *x x* and *y y*, Fig. 2. Fig. 2 represents a side elevation of Fig. 1. Fig. 3 represents a section on line *z z*, Fig. 2, showing especially the cutter-sharpening mechanism. Fig. 4 represents a detail to be hereinafter referred to.

Similar numerals of reference indicate corresponding parts in the several figures.

Referring to the drawings, 1 designates the bed of the lathe, which may be fastened to its support in any suitable manner. 2 and 3 designate standards secured to said bed, in the upper portion of which are the boxes 4 and 5, in which the shaft or spindle 6 revolves. One end 7 of said shaft extends beyond the box 5, and has a longitudinally-extending split 8 therein, thus forming a divided chuck in which a button 9 is adapted to be held. The other end 10 of said shaft 6 is projected beyond the standard 2, and revolves in the bearing 11 of the bracket 12, which is secured to the standard 2. 13 designates a lever which is pivotally mounted on the end of the said bracket 12, one end of said lever carrying a stud 14, which contacts at proper intervals with a suitable portion of the shaft 6, the other end of said lever being pivoted to the knuckle 15, which is attached to the stem 16, the latter passing freely through the standard 2, and having a roller 17 rotatably mounted in its extremity. The said roller 17 is adapted to contact with the cam 18, the working outline of which is clearly seen in Fig. 1, said cam being capable of turning freely on the stud 19, by means of the lever 20, which is attached to the upper face of said cam by the screws 21, said lever having a handle 23. The end 22 of said lever is pivotally attached to the bar 24, which latter is adjustably connected to another bar 26, while the end of the latter is attached to the plate or slide 25, which moves freely in the ways 27 secured to the bed 1.

28 designates an arm extending from the bar 24, and terminating in the slotted portion 29, through which latter passes the belt 30, shown dotted in Fig. 2, in which said belt is shown as passing around and actuating the fixed pulley 31 which is secured to the shaft 6, while the adjacent pulley 32 is loose on said shaft. The said plate 25 has attached to it the rearwardly extending bar 33, which has a depending portion 34 through which passes the threaded bolt 35, whose extremity is adapted to contact with the end 36 of the bed 1, said bolt being locked in any desired position by the nut 37.

38 designates a tool post, which is also secured to the plate 25, said tool post carrying the tool or cutter 39 therein, said cutter being adjustably secured in position by the screws 40, and said post being also adjustable relatively to said plate 25. 41 designates a block attached to said plate 25, and having an inclined face 42, the direction of which inclination is seen in Fig. 2.

43 designates a frame having a base portion 44, which latter is held in position relative to the bed 1 by the angle shaped bar 45, the overhanging portion of which engages said base, as is best seen in Fig. 3, the flange 46 on the bed 1 also assisting to hold said base in position, the latter being adjustable longi-

tudinally by means of the slot 47 therein, through which passes the bolt 48. The said frame 43 is provided with the laterally-extending arms 49 and 50, near the ends of which are formed bearings for the arbor or spindle 51, the lower end of which projects through the arm 50, and has attached thereto the sharpening device 52, which may be an emery or other grinding wheel. 53 designates a collar attached to said spindle at a point intermediate the arms 49 and 50, between which collar and the latter arm is interposed a spring 54, whereby it will be seen that the said spindle 51 can be moved vertically, carrying with it the wheel 52. 55 designates a pulley attached to the upper portion of said spindle around which a driving belt 56 passes.

57 designates a standard attached to the arm 49 in the upper portion of which is pivotally mounted the lever 58, one end of the latter being pivoted to the bar 59, which passes through the slots 60 in the laterally extending arms, the lower extremity of said bar having the lateral extension 61 in which the anti-friction roller 62 is journaled, said roller being directly over and in contact with the inclined face 42 of the block 41, at intervals, as will be explained. The end 63 of the lever 58 has the threaded stem 64 passing through it, the lower end of which contacts with a suitable portion of the hub of the pulley 55, said stem being adjustable by means of the thumb nut 65, which is pinned thereto, and locked by means of the other thumb nut 66.

67 designates a spring which has one end immovably attached to the lever 20, while its other end is attached to an ear on the sliding block 68, the latter having an extension 69, which projects in the direction of the handle 23 and passes through the stop 71, having its extremity curved into a hook 70, as best seen in Fig. 1.

The standard 2 has a corner 72 beveled, thus forming an abutment against which contacts the block 68, when it is in the position seen in full lines on the lever 20 in Fig. 1 and said lever is moved to the left. If however, the hook 70 be moved in the direction of the arrow, toward the handle 23, the block 68 will be also moved into the position seen in dotted lines, and if the lever 20 is moved to the left, said block will not contact with said abutment, for a purpose hereinafter referred to.

The operation is as follows: When the parts are in the positions seen in Figs. 1 and 2, the belt 30 being on the tight pulley, causes the chuck holding the button 9 to revolve, and the cutter 39 being in contact therewith, imparts the desired configuration thereto. A movement of the lever 20 to the left, moves the belt 30 by means of the belt shifter 28 upon the loose pulley 32. The revolution of the chuck and the button 9 ceases and the working face of the cam 18 being now in contact with the roller 17 causes the stud 14 by reason of the intermediate connections to move to the right, and to operate suitable mechanism which opens the jaws of the chuck, said chuck-actuating mechanism not being shown in detail, since it forms no part of the present invention, and the button can be removed. In the meanwhile, the plate 25 has been moved to the right by means of the bars 24 and 26, and the cutter 39 has been moved away from the button, and the block 68 is substantially in contact with the abutment 72, and the lathe having stopped, the button can be removed, and another one inserted, and on moving the lever 20 to the right, the chuck will be tightened, the belt shifted to the tight pulley 31, and the cutter presented to the button, and the parts will assume the position seen in Fig. 1.

If it is desired to sharpen the cutter 39, the hook 70 is moved in the direction of the arrow toward the handle 23, and when the lever 20 is moved to the left, the block 68 will not hit the abutment 72, but will move beyond it into the position seen at 73, and the cutter 39 will assume the extreme position seen dotted in Fig. 2, being now under the emery wheel 52, during which time the plate 25 has been moving toward the right, and the inclined face 42 of the block 41 has moved the bar 59 upwardly, and by reason of the intermediate connections 58 and 64, the grinding wheel 52 will be moved downwardly into contact with the tool or cutter 39, and the latter will be sharpened, the operation of the other parts being the same as has already been described. The spring 54 will move the grinding wheel upwardly, when the lever 20 is thrown again to the right, as is evident.

It will be noticed that by manipulating the bolt 35, the extent of movement of the plate 25 and the cutter 39 can be accurately adjusted, as also the vertical movement of the grinding wheel 52, by means of the stem 64. The block 41 and the tool post 38 can be shifted on the plate 25, and the movement of said plate and the belt shifter can also be regulated by adjusting the bars 24 and 26 with respect to each other, and the frame 43 can be adjusted longitudinally of the bed 1, when it is desired to present a different portion of the grinding wheel to the cutter, as is evident. It will furthermore be noticed that the movement of the same lever throws all the parts of the machine into or out of operative position, the movement of said lever in one direction serving to throw the lathe into operation, and present the cutter to the button, the latter having been in the meanwhile firmly engaged by the jaws of the chuck. A movement of the said lever in the opposite direction or to the left, stops the lathe, opens the jaws of the chuck, and moves the cutter away from the latter, while a continued movement of said lever to the left, when the block 68 has been moved toward the handle, brings the cutter under the grinding wheel, and simultaneously causes the latter to move toward and sharpen said cutter, as is evident.

In practice, we attach a collar 74 to the bar

59, above the arm 50, on which latter said collar normally rests, whereby the roller 62 is ordinarily held out of contact with the block 41, as seen in Figs. 2 and 3. When however, the lever 20 is moved into its extreme left hand position 73, as seen dotted in Fig. 1, the block 42 contacts with the roller 62, raising the bar into the position seen in Fig. 4, and thus causing the grinding wheel 52 to descend and sharpen the cutter, which is now directly under it, as is evident.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a button turning lathe, a rotatable chuck adapted to receive a button, means for actuating said chuck, a belt shifter, a tool post adapted to carry a tool therein, a sharpening device adjacent said tool post and means for opening and closing the jaws of said chuck, in combination with a lever having connections therefrom common to said chuck, sharpening device, and tool post, substantially as described.

2. In a button turning lathe, a movable plate, a tool post thereon adapted to carry a tool, an inclined block 41 attached to said plate, a grinding wheel adjacent the latter, means for supporting and actuating said wheel, a bar supported over said block, and adapted to be actuated thereby, connections from an end of said bar to said grinding wheel, whereby the latter can be moved toward or away from said tool, a chuck and means for rotating the latter, substantially as described.

3. In a button turning lathe, a lever, having a sliding block thereon, an abutment against which said block is adapted to contact, a chuck, means for rotating the latter, a movable tool post, a sharpening device located adjacent said tool post, and connections common to said lever, tool post and sharpening device, substantially as described.

4. In a button turning machine, a stationary lathe head, a rotatable spindle having a split chuck mounted in said head, a movable slide carrying a cutter thereon, a sharpening device for the latter, adjacent to said slide, and a single lever suitably mounted, and having connections therefrom common to said spindle, slide, and sharpening device, whereby the above parts can be thrown into or out of operative position, substantially as described.

5. In a button turning lathe, a bed, standards supported thereon, a shaft journaled in said standards, a chuck carried by said shaft, a lever mounted on said bed, a sliding plate, a tool holder on said plate, a sharpening device, a rotatable shaft therefor having suitable bearings, connections common to said lever, plate and sharpening device, a sliding block movable on said lever, and having a projection adapted to abut against one of said standards or to pass by the same in the movements of said lever, said parts being combined substantially as described.

6. In a button turning lathe, a stationary head, a shaft having a chuck mounted therein, a cam adapted to actuate a stem having connections to the chuck operating mechanism, a lever attached to said cam, and having connections also to a movable slide carrying a cutter, a grinding wheel adjacent the latter, mounted in suitable bearings, a collar attached to the arbor of said wheel, a spring interposed between said collar and one of said bearings, a bar and connections therefrom for varying the position of said grinding wheel, and means for actuating said bar simultaneously with said lever, substantially as described.

7. In a button lathe, a stationary head, a spindle and chuck mounted therein, a movable slide carrying a cutter, a lever, connections therefrom for actuating said slide and chuck, a sharpening device, also thrown into operative position by said lever, a stop device for the latter consisting of an abutment, a block mounted on said lever, means for actuating said block and means for restoring the same to its normal position, substantially as described.

8. In a button turning lathe, a bed having standards with a rotatable shaft mounted thereon, a holding chuck carried by said shaft, a lever mounted on said bed, a bar pivoted to said lever, a sliding plate pivoted to said bar, a tool holder on said plate, a frame secured on said bed having arms with a rising and falling rotatable shaft journaled therein, a sharpening wheel on said shaft and mechanism for raising and lowering said shaft and thereby said sharpening wheel, said parts being combined substantially as described.

9. In a button turning lathe, a bed with a rotatable shaft mounted thereon, having a holding chuck carried thereby, a sliding plate having a tool holder thereon, a frame connected with the said bed having a shaft with a sharpening wheel thereon, journaled in arms thereof, a rising and falling bar guided in said arms, and having a roller on its lower end, an incline on said plate, contacting with said roller, and a lever mounted on said frame and pivoted to said bar, a bolt carried, by said lever bearing against the sharpening wheel shaft, and mechanism for operating said sliding plate, said parts being combined substantially as described.

10. In a button turning lathe, a bed, standards attached thereto having a rotatable shaft journaled thereon, a holding chuck carried by said shaft, a lever mounted on said bed, a bar pivoted to said lever and having a shifter arm thereon, a sliding plate movable in ways on said bed, and secured to said bar, a tool holder on said plate, a frame secured to said bed, a sharpening wheel, on a rotatable shaft journaled in said frame, a sliding block movable on said lever, and having a projection adapted to abut against one of said standards or to pass by the same, in the movements of

said lever, said parts being combined substantially as described.

11. In a button turning lathe, a bed with a standard thereon, having a portion adapted to serve as a stop, a pivoted lever mounted on said bed, a sliding block movable on said lever and having an ear thereon, a spring connected with said ear and lever, a stop secured to said lever, and an extension of said block passing through said stop and having a hook on its end, said parts being combined substantially as described.

12. In a button turning lathe, a bed, with a rotatable shaft mounted thereon, carrying a holding chuck, a sliding plate carrying a tool holder, an arm on said plate carrying an adjustable bolt, adapted to abut against said bed, a frame on said bed having an adjustable rotatable shaft with a sharpening wheel, thereon, an incline on said bed, and a rising and falling bar mounted on said frame and carrying a roller riding on said incline, mechanism connected with said bar for lowering said sharpening wheel shaft and a spring for raising it, and mechanism for reciprocating said plate, said parts being combined substantially as described.

13. In a button turning lathe, a shaft mounted in suitable bearings, a grinding device thereon, a collar on said shaft, a spring interposed between said collar and one of said bearings, an upright bar supported adjacent said shaft, a roller journaled in the lower extremity of said bar, a sliding plate having an inclined surface thereon, adapted to contact with said roller, means for holding said roller normally out of contact with said plate, a tool post mounted on the latter, connections from said bar adapted to depress, said grinding device when said tool post is moved adjacent thereto, and means for moving said plate and tool post, said parts being combined substantially as described.

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