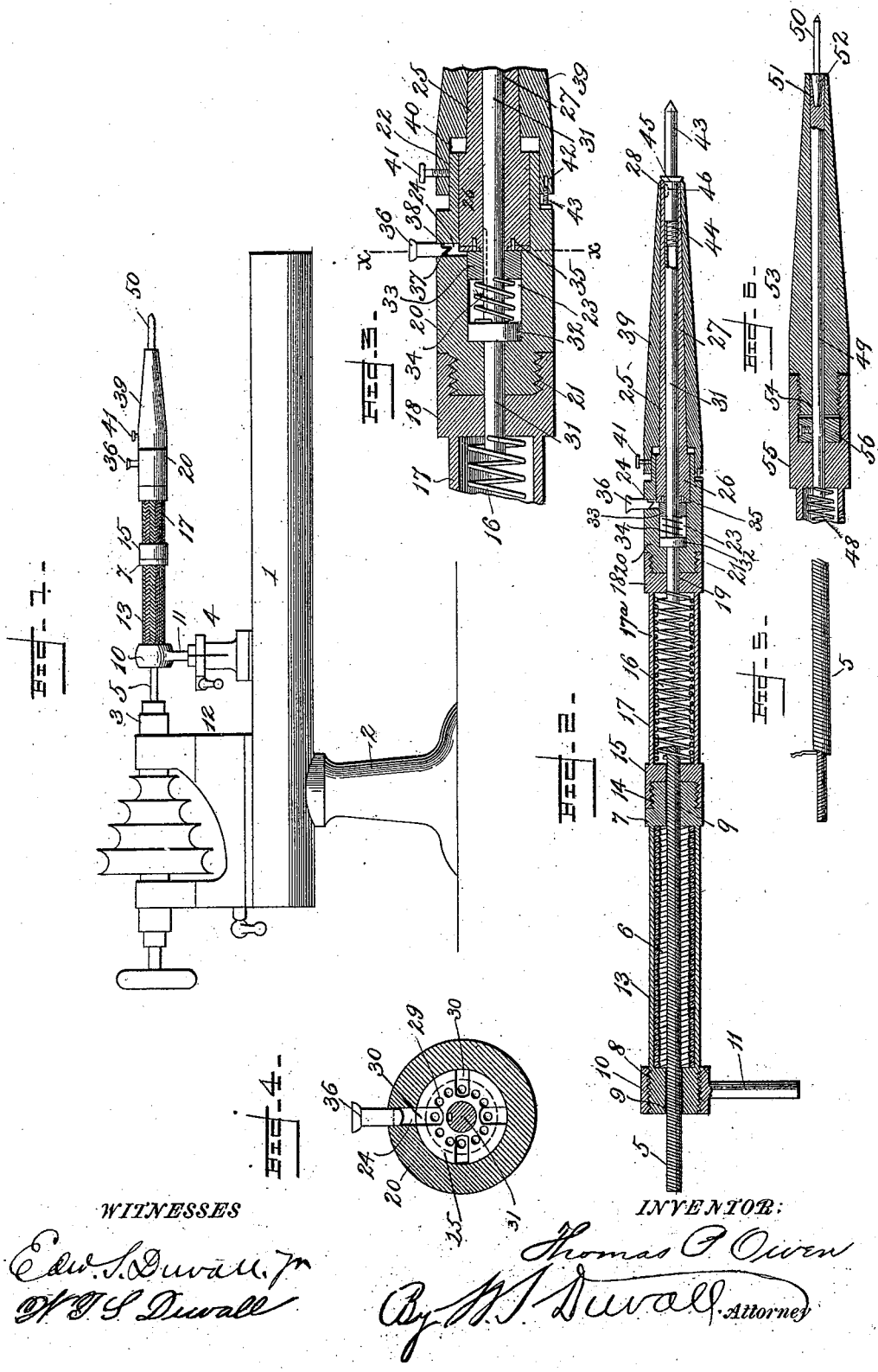
No Model.)

T. P. OWEN.

TOOL HOLDER FOR JEWELERS' LATHES.

No. 549,250. Patented Nov. 5, 1895.



WITNESSES

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TOOL-HOLDER FOR JEWELERS' LATHES.

SPECIFICATION forming part of Letters Patent No. 549,250, dated November 5, 1895.

Application filed July 17, 1894. Serial No. 517,781. (No model.)

To all whom it may concern:

Be it known that I, THOMAS P. OWEN, a citizen of the United States, residing at Adams, in the county of Gage and State of Nebraska, have invented certain new and useful Improvements in Tool-Holders for Jewelers' Lathes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to tool-holders for jewelers' lathes, the objects in view being to produce a simple, inexpensive lathe attachment designed to securely hold jewelers' tools for boring, engraving, or polishing work, said holder being adapted for attachment to the lathe without alteration of the latter and so constructed as to be flexible while in the hand of the operator and thus adapted to expedite and otherwise facilitate the work.

Various other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a side elevation of a jewelers' lathe with my tool-holder in position for use. Fig. 2 is a longitudinal sectional view in detail of the holder. Fig. 3 is an enlarged sectional view of a portion of the holder. Fig. 4 is a transverse sectional view of the holder, the section being taken on the line $x\,x$, Fig. 3. Fig. 5 is a detail in section of a portion of the flexible main shaft. Fig. 6 is a sectional view of a slightly-modified construction hereinafter described.

Like numerals of reference indicate like parts in all the figures of the drawings.

The lathe illustrated in Fig. 1 of the drawings is of the usual construction, and therefore consists of the bed 1, supported upon the usual base 2, and having mounted thereon the chuck 3 and rest-supporting standard 4. In use the tail-stock, it will be understood, is removed, as is also the rest.

In constructing my attachment I employ a flexible main shaft 5 of proper length, and the same consists of inner and outer strands of coiled wire, the coils being reversely disposed with relation to each other. (See Fig. 5.) Between its ends the flexible main shaft 5 is inclosed by a coiled-wire tube 6 of considerably greater diameter, the same having its ends connected securely to front and rear plugs 7 and 8, respectively. These plugs are axially bored and loosely receive the flexible main shaft 5, as indicated at 9. The rear plug 8 is externally threaded, as shown, and is seated in the threaded eye 10 of a supporting-standard 11. The lower end of this standard 11 is adjustably and removably seated in the rest-support 4, being held in any of its adjusted positions by means of the binding-screw 12 thereof. Between the plugs 7 and 8 the coiled-wire tube 6 is provided with a covering 13 of plaited fabric or other material. The outer end of the front plug 7 is reduced and externally threaded, as at 14, and over the same is threaded a metal socket 15, which is also axially bored to form a continuation of the bore 9 of the plug 7 and form a passage for the main shaft 5.

To the outer or that end of the flexible main shaft 5 that projects beyond the socket 15 is attached, by solder or otherwise, the loosely-coiled flexible shaft 16, the same being loosely inclosed by the plaited or other covering 17. Interposed between the coiled-wire shaft 16 and its cover 17 is the coiled-wire core 17^a, if so desired, the same tending to support the covering 17 out of contact with the shaft 16. The outer end of the covering 17 is secured to an internally-threaded socket 18, which is axially bored, as at 19, while the rear end of said cover is secured to the corresponding rear internally-threaded socket 15, heretofore mentioned.

20 designates a cylindrical plug, the rear end of which is externally reduced and threaded, as at 21, so as to fit removably within the internally-threaded front socket 18. The front end of the plug 20 is annularly reduced, as indicated at 22, and is furthermore chambered, as at 23. A transverse hole 24 is formed in the upper side of the plug, and, as shown, communicates with the chamber 23. A holding-shaft 25, having an enlarged rear end 26, has said rear end accurately fitted in the chamber 23 of the plug and occupies the front portion thereof, said chamber, as shown, being slightly enlarged at its front end to receive the same. The shaft 25 is axially bored, throughout its length,

as indicated at 27, and has its forward reduced surface slightly tapered toward its outer end, where the bore is provided with a nib 28. The rear enlarged end of the shaft 25 is provided with an annular series of perforations or holes 29 and with a series of radial grooves 30, (see Fig. 4,) any one of the latter being adapted to register with the pin-hole 24 of the plug 20.

Located in the bore 27 of the shaft 25 is a cylindrical shaft 31, the same extending from a point near the front end of the shaft 25 rearward through the opening 19 in the socket 18, where it is secured by solder or otherwise to the front end of the coiled-wire shaft 16. The front extremity of the shaft 31 is threaded to receive the shank of a tool, as will hereinafter appear, and within the chamber 23 it is provided with an external enlargement or boss 32, which abuts against the rear end of said chamber. In advance of this boss 32 there is loosely splined for reciprocation upon the shaft 31, within the chamber 23, a washer 33, between which and the boss 32 there is located a light coiled spring 34, which exerts a tendency to force the washer forward or toward the end of the shaft 25, and thus cause the pins 35, with which the front face of the washer is provided, to engage with the annular series of pin-holes 29, with which the rear end of the main shaft 25 is, as before mentioned, provided.

Mounted for movement in the transverse hole 24 of the cylindrical plug 20 is a locking-pin 36, the same having a convenient head at its upper end, whereby it may be depressed by the thumb of the hand of the operator. This pin 36 at its lower or inner end has its rear face or side slightly cut away, forming the beveled face 37, while at its front side it is notched or recessed, as at 38.

Inclosing the shaft 25 and extending rearward over the reduced portion of the front end of the plug 20 is a metal sleeve 39, the same having its rear end chambered or enlarged to coincide with the front reduced end of the plug. Near its rear end the sleeve is provided with a threaded opening in which is seated a binding-screw 41, the inner end of which impinges upon the plug 20 and thus adjustably secures the two together.

The rear face of the sleeve 39 is provided with a threaded hole 42, in which is seated a headed stop or adjusting-screw 43, the same extending rearward and therefore bearing against the front end of the plug 20. By a proper adjustment of this screw the sleeve can be instantly and accurately fitted to the plug and thus compensate for any wear that has taken place.

50 designates the tool, which may be of any kind whatever, and therefore adapted for boring, polishing, engraving, &c., and 44 designates the externally-threaded shank of the same. Between the shank and point the tool is in the present instance provided with the annular flared shoulder 45, which abuts against the shaft 25, and in rear of the shoulder the shank is provided with a groove 46 to receive the nib 28, whereby the tool and shaft 25 may be firmly locked against independent rotation.

In operation the standard 11 is seated in the rest 4, the rear end of the flexible main-shaft being secured in the chuck of the lathe. The chuck revolving causes the shaft 5 to revolve and carry with it the spiral shaft 16, the tool-holding shaft 31, and the tubular shaft 25, the remaining parts of the attachment being stationary. The attachment, it is seen, may be conveniently grasped by the hand of the operator and the tool guided in its work without danger of the hand coming in contact with any of the moving parts. The major portion of the attachment being flexible, also aids in the accuracy of and greatly facilitates the work and permits the tool to be held at any angle or position with relation to the work.

In order to apply and tighten the tool in the shaft 31, the pin 36 is depressed, so that its lower end at its front recessed side enters ones of the grooves 30, whereby the shaft 25 is locked against movement. At the same time the beveled rear face of the pin, acting against the front face of the washer 33, causes the latter, against the tendency of the spring 34, to recede, thus unlocking the same from the shaft 25 by withdrawing its pins from the pin-holes therein. This leaves the tool-holding shaft 31 free to rotate independently of the shaft 25. The nib of the shaft 25, engaging the groove in the tool, holds the latter stationary, and the shaft 31, rotating, causes the threads thereof to engage with those of the tool. To disengage the tool the same operation takes place, except that the chuck is revolved in the reverse direction. Of course, as soon as the pin is released the spring 34 returns the washer to its engaging or locking position with the rear end of the shaft 25, and hence causes the pin 36 to rise out of operative position.

From the foregoing description, in connection with the accompanying drawings, it will be seen that I have provided a very simple, inexpensive tool-holding attachment for jewelers' lathes, the same being so constructed as to permit of a ready grasping and handling of the device and manipulation of the revolving tool.

Although I have illustrated the invention and described the same as applied to a jeweler's lathe and primarily intend it for such use, yet it will be apparent that it may be used in connection with dental engines or drills, if so desired.

I do not limit my invention to the precise details of construction herein shown and described, but hold that I may make such variations therein as come within the knowledge of the skilled mechanic without departing from the principles or sacrificing the advantages of the invention.

As an evidence of the above, reference is had to Fig. 6 of the drawings, wherein I have illustrated a modification of the invention, and in which 48 designates the coiled-wire shaft, which corresponds to the shaft 16 in the formerly-described construction, and 49 the tool-holding shaft, in which the tool 50 is seated. In the present instance, however, the shaft 49 is simply provided with a conical socket or seat 51, in which is snugly fitted the conical head 52 with which the tool is provided. The sleeve 39 of the formerly-described construction is omitted and a tubular shaft 53 employed, the latter being reduced and threaded at its rear end, as at 54, and inserted in the front chambered and threaded end of the socket 55. Within this socket or chamber there is arranged upon the shaft 49 an adjustable sleeve or washer 56, the same being held in any position upon the shaft by a binding-screw 57.

Other modifications and uses will readily suggest themselves.

Having thus fully described my invention, what I claim is—

1. The herein described lathe-attachment, the same consisting of the hollow stationary shaft, a rotatable shaft supported therein and adapted at one end for receiving motion from a lathe, a tool receiving-device at the opposite end of the rotatable shaft, and an intermediate support for the stationary hollow shaft, and adapted at its lower end to be secured to the rest of a lathe, substantially as specified.

2. The combination with a lathe, of a rotatable flexible shaft secured at one end to the chuck of the lathe and at its opposite end provided with a tool receiving-device, a flexible stationary inclosing shaft for the rotatable shaft and a support for the stationary inclosing shaft located between the ends thereof and at its lower end supported upon the lathe-bed, substantially as specified.

3. The herein described lathe-attachment, the same consisting of flexible inner and outer shafts, the latter being rotatable and adapted to be secured within a lathe-chuck, a tool-receiving device connected to the outer end of the rotatable shaft, an intermediate supporting standard adapted at its lower end to enter and be adjustably held within the hand-rest support of the lathe and at its upper end provided with a bearing eye for receiving the said outer shaft, substantially as specified.

4. In a lathe attachment, the combination, with a shaft adapted to be secured to the chuck of a lathe and a tubular threaded tool receiving-shaft connected thereto, of a hollow shaft arranged upon the tubular tool receiving shaft projecting therebeyond and adapted to engage with the shank of a tool in advance of said shaft, a socket connected with the inner sleeve, and means for locking the socket and tubular shaft together, substantially as specified.

5. In a lathe attachment, the combination with the shaft adapted to be secured to a lathe-chuck, of a plug connected to the shaft chambered and arranged at the front end of the tubular cover, a sleeve seated in the plug, a tool-receiving shaft seated in the sleeve and threaded at its outer end to engage with a tool, means for locking the plug and sleeve together, and means for normally locking the tool-receiving shaft and sleeve together, substantially as specified.

6. In a lathe-attachment, the combination with the flexible shaft, the opposite bored plugs arranged thereon between its ends and externally threaded, the threaded eye arranged in the rear plug and provided with a standard, the coiled-wire tube located between the plugs and the covering therefor, of the internally threaded socket engaging the front plug and centrally bored to form a passage for the shaft, the outer internally threaded plug, the intermediate tubular connection for the two, the chambered plug seated in the outer plug and centrally bored, the tool receiving shaft arranged therein, the coiled-wire shaft connecting the two shafts, substantially as specified.

7. The herein described tool-holder, the same consisting of the chambered plug, the hollow sleeve located for rotation thereon, the tool receiving shaft arranged in axial bores formed in the plug and sleeve, means for normally locking the sleeve and tool receiving shaft together for simultaneous movement, and for unlocking the same for independent movement when desired, substantially as specified.

8. In a lathe-attachment, the combination with a shaft adapted to be secured to the chuck of a lathe, a tool receiving shaft connected thereto, the boss on the tool receiving shaft, a washer splined on the tool receiving shaft in advance of the boss and provided at its front end with pins, of an intermediate coiled spring, a loose sleeve arranged on the tool receiving shaft, a socket for receiving the tool receiving shaft, boss, and washer, a locking-pin arranged in the socket, said pin having an inclined face and at its front recessed to enter grooves in the tubular shaft, substantially as specified.

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

THOMAS P. OWEN.

Witnesses:
W. C. GRAY,
N. C. SHAW.