(No Model.)

E. V. TANNER.

Machine for Grinding Plug Valves.

No. 237,784. **Patented Feb. 15, 1881.**

Fig 1

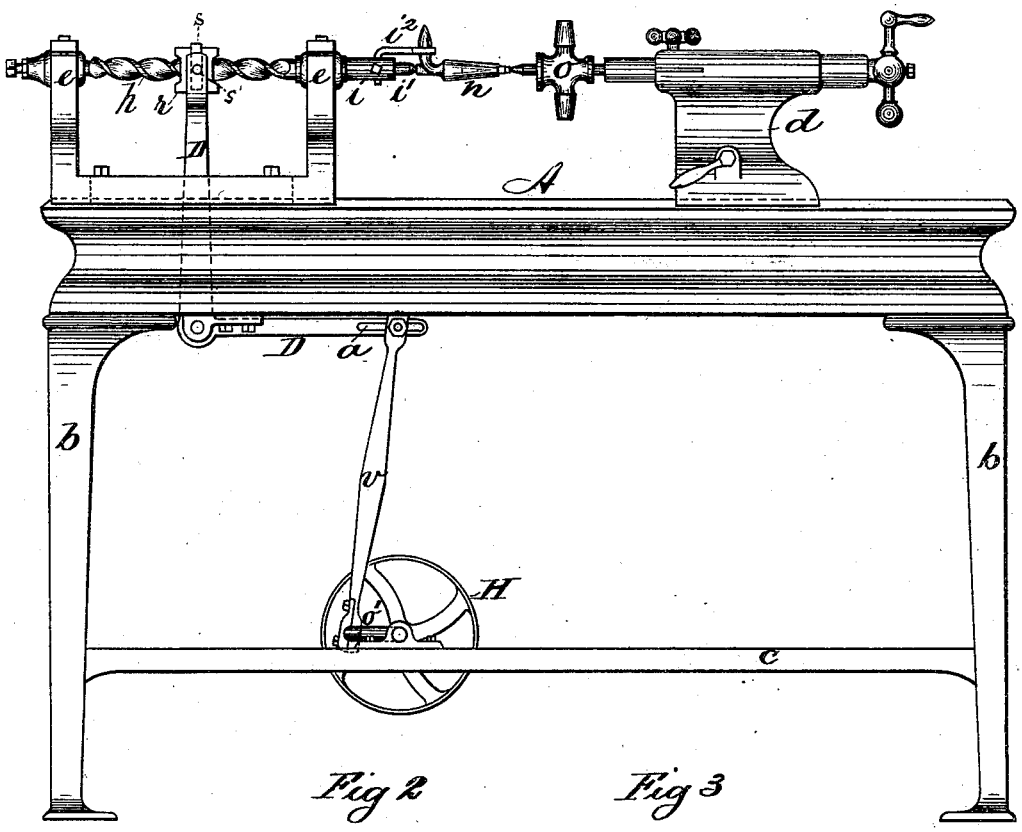


Fig 2

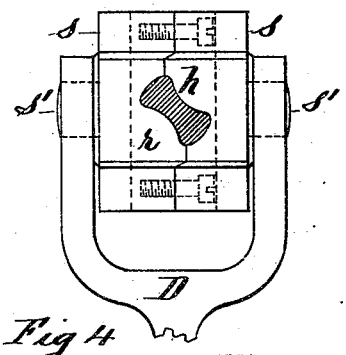


Fig 3

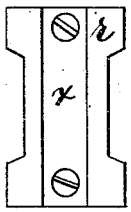


Fig 4

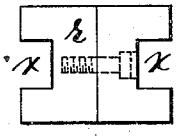
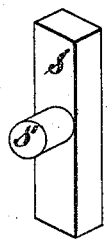


Fig 5



Witnesses
Wm. H. Chapin
J. D. Garfield.

Inventor
Edgar V. Tanner
By Henry A. Chapin
Attorney.

UNITED STATES PATENT OFFICE.

EDGAR V. TANNER, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HENRY M. BREWSTER, OF SAME PLACE.

MACHINE FOR GRINDING PLUG-VALVES.

SPECIFICATION forming part of Letters Patent No. 237,784, dated February 15, 1881.

Application filed December 8, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDGAR V. TANNER, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Machines for Grinding Plug-Cocks, of which the following is a specification.

My invention relates to the details of construction of a machine for holding and reciprocally rotating the plug of a cock while the body thereof is held and forced against it, so as to grind the plug to its place in the body, the object being to provide a machine which can be adjusted to reciprocally rotate a plug to greater or less degree, rotate it with perfect steadiness of motion, and with the least possible shock when the motion changes, and one which is practically noiseless in its operation.

In the drawings forming part of this specification, Figure 1 is a side elevation of my improved grinding-machine, in which is shown the plug of a cock secured between its centers, and the body thereof hanging upon one of them in the positions in which they are placed when about to be operated upon. Fig. 2 is an end elevation of the spindle-nut, together with the forked end of the elbow-lever engaging therewith, and in which is shown, in cross-section, the form of a screw upon which it operates. Fig. 3 is a side elevation of said nut. Fig. 4 is a plan view of the end thereof, and Fig. 5 is a view of one of two slides which are pivoted to said forked ends of said lever and engage in vertical grooves, one on each side of said nut.

A is the bed of the machine. *b b* are legs. *c* is a girth extending from leg to leg. *d* is an ordinary lathe tail-stock, mounted on bed A in the usual manner. *e* is a head-stock provided with spindle-boxes of ordinary construction. *h* is a spindle, provided with bearings to fit into the said boxes in the head-stock *e*, and is made of spiral form between its bearings, as shown, and its inner end has a screw cut thereon, to adapt it to receive the chuck *i* in the usual way. The form of this spindle, in cross-section, is seen in Fig. 2.

Chuck *i* is provided with a center, i', and an arm, i^2, extending out over and in a line with center i'.

n is the plug of a cock secured in the machine, and *o* is the body thereof.

Fitted to the spiral portion of spindle *h* is a nut, *r*, made in halves, which are secured one to the other by screws, as shown, and the two outer sides of said nut have grooves *x x* therein, as seen in Fig. 4, in which are fitted two slides, *s*, provided with pivots s'.

A bell-crank lever, D, is hung, by a suitable fulcrum connection, to the under side of bed A, as shown, and the end of its vertical arm passes up through said bed and through the base of the head-stock, through a slot in the latter, and is bifurcated, as shown in Fig. 2, and its two arms are pierced to receive the pivots s' on slides *s*, and nut *r* is placed between said slides, as in Fig. 2. In Fig. 1, spindle *h*, the said nut, and the end of the lever D, in which it operates, are all seen in their respective operative positions. The horizontal arm of lever D is provided with a slot, *a*, near its end.

Upon the girth *c* is mounted, in suitable bearings, a crank-shaft, o', provided with a driving-pulley, H, and said crank-shaft is connected with the horizontal arm of lever D by a pitman, *v*, whose upper end is connected to said lever by a bolt passing through slot *a* therein, by means of which the end of the pitman may be adjusted toward and from the end of the lever, for the purpose hereinafter explained.

The operation of my machine is as follows: The plug *n* and body *o* of the cock are put in the machine, as shown in Fig. 1. The usual grinding-substance is applied to the plug, and the machine is set in motion through a belt running upon pulley H, or by other suitable means, whereby the crank-shaft o' is revolved. This causes a vibratory motion in the bell-crank lever D, whereby the nut *r* is caused to have a reciprocating motion on the spindle *h*, causing the latter and the plug *n* to have a reciprocating rotary motion, and while the plug is being turned the operator grasps the body *o* by its shanks, and holding and pressing it upon the plug the latter is rotated back and forth in the body, and the two are very quickly ground to a fit. As the forked ends of lever D operate upon nut *r* the slides *s* have a re-

ciprocating vertical motion in the grooves *x x* in the sides of said nut.

In practice, it is desirable to have the plug, while being ground, turn in the body a little more than one revolution to grind a true seat for itself within it; and to provide means for adjusting the stroke of lever D, so that the rotary motions of spindle *h* may be adjusted to the degree of turn required for plugs of different diameters, the horizontal arm of lever D is provided with the slot *a*, so that the point of the pitman-connection with it may be changed to different distances from its fulcrum, causing nut *r* to be moved more or less each side of the centre of spindle *h* between its bearings.

From the above it will be seen that while the two parts of nut *r* are kept properly secured against the spindle *h* any horizontal movement of said nut will cause a corresponding rotary motion in the spindle. Hence the action of the lever D and said nut upon the spindle, when proper heed is given to said adjustment, will be attended with no shock when the motions are reversed, but the machine will operate steadily and without noise.

What I claim as my invention is—

1. In a cock-grinding machine, the combination, with a chuck for holding the plug of a cock, of a spindle of spiral form, of a nut fitted to said spindle, and of appliances for holding and moving said nut reciprocally upon said spindle, substantially as and for the purpose set forth.

2. In combination, the chuck *i*, the spirally-formed spindle *h*, the nut *r*, the bell-crank lever D, and appliances for imparting a vibratory motion to said bell-crank lever, substantially as and for the purpose set forth.

3. The combination, with the spindle *h*, nut *r*, crank-shaft *o'*, and pitman *v*, of the bell-crank lever D, having the slot *a* in its horizontal arm, substantially as and for the purpose set forth.

EDGAR V. TANNER.

Witnesses:

A. S. HILLS,

H. A. CHAPIN.