(No Model.) 2 Sheets—Sheet 1.

C. L. MORSE.

MACHINE FOR RESEATING VALVES.

No. 456,704. Patented July 28, 1891.

Fig. 8.

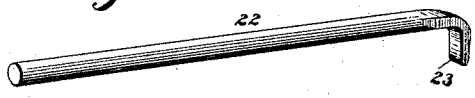


Fig. 1

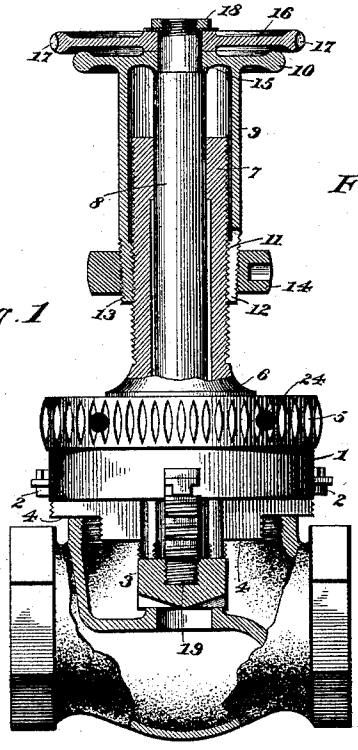


Fig. 2.

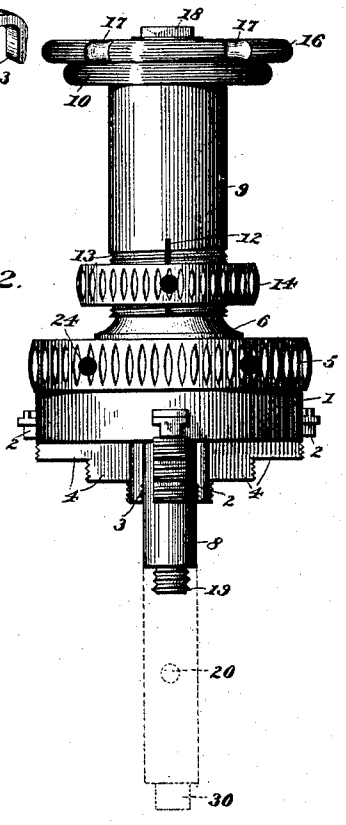


Fig. 7.

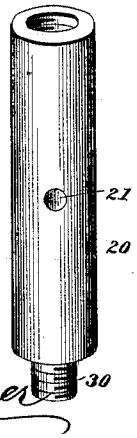
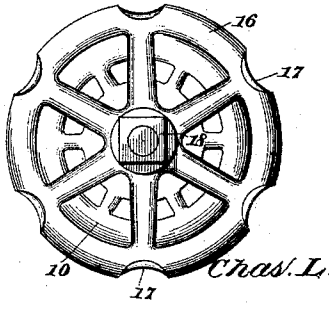


Fig. 3.



Witnesses;

J. M. Withers

Wm. Bagger & Co.

Inventor

Chas. L. Morse,

By his Attorneys,

C. A. Snow & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

C. L. MORSE.

MACHINE FOR RESEATING VALVES.

No. 456,704. Patented July 28, 1891.

Fig. 4.

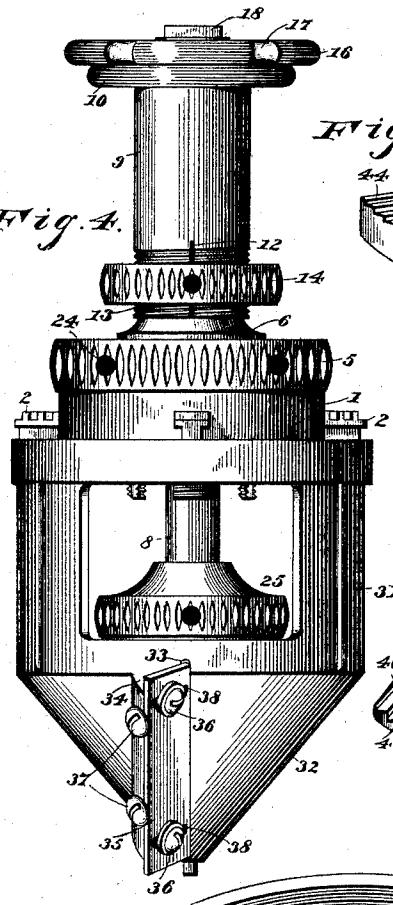


Fig. 9.

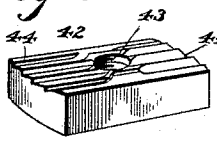


Fig. 10.

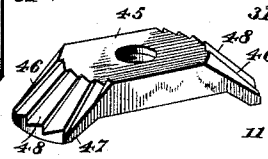


Fig. 6.

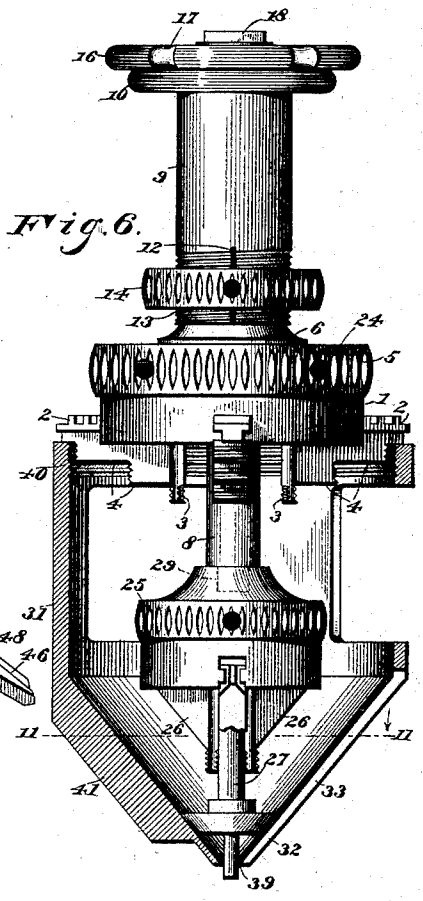


Fig. 5.

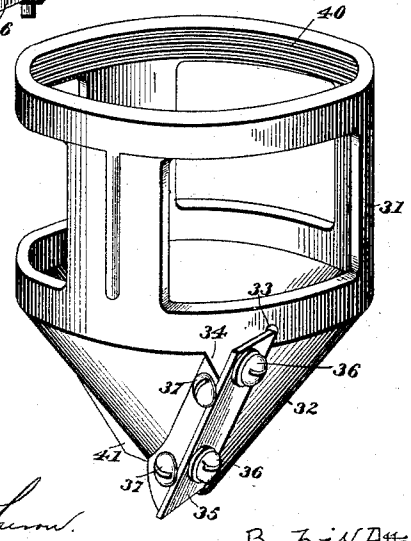
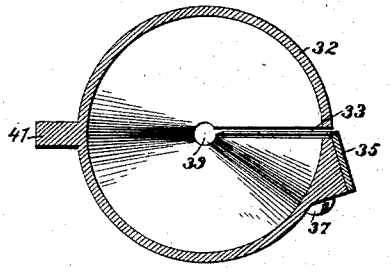


Fig. 11.



Witnesses

J. M. Withum.

Wm. Bagger.

Inventor

Chas. L. Morse,

By his Attorneys,

C. A. Snow & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES L. MORSE, OF ATHOL, MASSACHUSETTS.

MACHINE FOR RESEATING VALVES.

SPECIFICATION forming part of Letters Patent No. 456,704, dated July 28, 1891.

Application filed December 23, 1890. Serial No. 375,610. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. MORSE, a citizen of the United States, residing at Athol, in the county of Worcester and State of Massachusetts, have invented a new and useful Valve-Reseating Machine, of which the following is a specification.

This invention relates to machines for dressing and resurfacing the valves and valve-seats of globe-valves, faucets, and the like; and it has for its object to construct a machine of this class by means of which the valves and seats may be resurfaced in an absolutely perfect and true manner, thus enabling the valves to fit as closely and tightly as when new.

My present invention, which may be described as being in part an improvement on the device for which Letters Patent of the United States No. 429,939 were granted to myself on the 10th day of June, 1890, consists in certain improvements in the turning tool or apparatus for holding the cutters for dressing or resurfacing the seats of valves and faucets.

The invention further consists in the combination, with the said tool, of a device for dressing and resurfacing tapering valves.

The invention further consists in certain improvements in the cutters for dressing flat and tapering seats.

The invention further consists in the combination, with the turning tool or holder, of an attachment for holding various kinds of tapering valves while being dressed.

The invention finally consists in certain improvements in the construction and arrangement of details, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a vertical sectional view of the turning-tool, showing it applied in position for operation. Fig. 2 is a side elevation with dotted lines showing the extension rod upon the spindle. Fig. 3 is a top plan view. Fig. 4 is a side view of the apparatus, showing it provided with the attachment for holding valves while being dressed. Fig. 5 is a perspective detail view of the valve-dressing attachment. Fig. 6 is a vertical sectional view showing the turning-tool combined with the valve-dressing attachment in position for operation. Fig. 7 is a detail view of the extension-rod for the rotating spindle. Fig. 8 is a detail view of the spanner for adjusting the chucks and the extension-rod. Figs. 9 and 10 are detail views of two forms of cutters used in connection with my invention. Fig. 11 is a detail sectional view taken on the line 11 11 in Fig. 6.

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

1 designates a chuck having radially-adjustable jaws 2, the inner sides of which are screw-threaded, as at 3, and the outer sides of which are provided with series of steps 4, which are likewise screw-threaded in order that the said chuck may engage the threads of interiorly or exteriorly threaded faucets or valve-casings, to which the device is to be applied for operation. The said chuck is to be constructed, preferably, in the manner shown in my former patent, to which reference has been made above, and it is no part of my present invention. It is provided with the periphery-ring 5, which may be turned for the purpose of simultaneously adjusting the radially-movable jaws. The solid back 6 of the clutch is provided with an upwardly-extending exteriorly-screw-threaded tube 7, forming a bearing for the spindle 8, the lower end of which extends through the chuck.

9 designates a tube, the upper end of which has a hand-wheel 10 and the lower end of which has an interiorly-screw-threaded portion 11, engaging the exteriorly-threaded tube 7, upon which it is mounted. The lower end of the tube 9 is provided with vertical slots 12, and it has a tapering and exteriorly-threaded portion 13, upon which a tightening-nut 14 is mounted.

The spindle 8 is provided near its upper end with a shoulder 15, forming a bearing for the hand-wheel 10 of the tube 9. Suitably keyed upon the spindle above the said hand-wheel is a hand-wheel 16, the rim of which is provided with recesses 17 to afford a firm hold for the hand of the operator. The spindle is provided above the hand-wheel 16 with a nut 18, which serves partly to hold the said hand-wheel in position upon the spindle and

also to enable it to be forced downwardly for the purpose of taking up slack which may be caused by wear upon the said spindle.

The lower end of the spindle 8 is provided with an exteriorly-screw-threaded stem 19, upon which a cutting-tool may be mounted, as will be presently more fully described.

I desire here to state that it is the intention to make the screw-threaded tube 7, the tube 9, mounted thereon, and the spindle 8 as short as is compatible with perfect efficiency of the device. This is for the purpose of enabling the apparatus to be used for the purpose of dressing valve-seats in any place where a valve may be found without necessity for removing the valve-casing from its connections.

For the purpose of enabling the apparatus to be used for dressing the seats of large valves where the valve-seat is too far removed to enable the short spindle to reach it, I avail myself of an extension 20, which may be readily mounted upon the lower end of the spindle, and which has a transverse perforation 21 to receive the end of a spanner, by means of which it may be tightened. This spanner, which is designated by 22, consists of a rod having a downturned end 23, which is flattened to form a screw-driver. This spanner is likewise useful to operate the periphery-ring of the chuck, which is provided with recesses 24 for the reception of said spanner.

25 designates a chuck, which is constructed substantially like the chuck 1, and is provided with radially-adjustable jaws 26, the lower ends of which are threaded interiorly and exteriorly to enable the said jaws to hold differently-constructed valve-disks, which are either provided with stems, such as 27, or with interiorly-screw-threaded recesses. The back plate of the said chuck is provided with a screw-threaded recess 29, by means of which it may be adjusted upon the lower end of the spindle 8 or upon the extension 20 of the said spindle, which is provided at its lower end to the screw-threaded stem 30. This supplemental chuck is used in connection with the attachment for dressing valve-disks, which has been shown in Figs. 4, 5, and 6 of the drawings. Said attachment consists of a solid or skeleton casing 31, having a conical extension 32, provided with a longitudinal slot 33, adjacent to which is formed a seat or shoulder 34, upon which a cutter 35 is mounted adjustably by means of screws 36 and 37, the former of which extend through slots 38 in the said cutter, while the latter are inserted into the shoulder or seat 34 with their heads bearing against the outer edge of the cutter, which latter may thus be very accurately adjusted and securely held in position for operation. The lower end of the conical extension 32 of the shell or casing 31 is provided with an opening 39, through which the valve-stem may extend when a valve having a stem is being operated upon. The upper edge of the casing 31 is interiorly screw-threaded, as shown at 40, for the attachment of the clutch 1 of the turning-tool, the jaws of which clutch may be expanded radially, so as to engage the said screw-threaded portion of the shell or casing, which latter may thus be very firmly connected with the clutch of the turning-tool. The casing 31 or the tapering portion 32 of said casing is provided with an exterior integral rib 41, by means of which it may be securely mounted in a vise for operation.

In Figs. 9 and 10 of the drawings I have shown two forms of cutters for dressing, respectively, flat and beveled or tapering valve-seats. The cutter shown in Fig. 9, which is designated by 42, is for the purpose of dressing flat valve-seats, and it consists of a flat bar having a central screw-threaded perforation 43 and provided on opposite sides of the said perforation with oppositely-inclined longitudinal parallel teeth 44. In cutters of this kind as heretofore constructed the teeth have usually been made to radiate from the center. While this construction is very suitable for cutters that I used for dressing small surfaces, it is not desirable for dressing larger valve-seats, for the reason that the teeth are caused to act not only simultaneously, but with a straight radial movement, which is apt to cause the material that is being operated upon to crack or chip off. By arranging the teeth, as herein described, longitudinally and parallel to each other, they will operate with a sweeping movement that will cause the surface of the material that is being operated upon to be shaved off easily and accurately. Again, the cutters being made comparatively narrow, or in the form of oblong bars, as herein described, may be much more easily operated than the circular cutting-disks which are usually employed. A similar principle has been applied to the construction of the cutters 45, a specimen of which has been illustrated in Fig. 10 of the drawings, and which are used for the special purpose of dressing beveled or tapering valve-seats. This cutter is likewise composed of a comparatively narrow oblong bar having beveled ends 46, which may be extended so as to form the wings 47, and which are provided with the teeth 48. My invention being adapted to be operated by hand only, these cutters are especially advantageous for dressing the seats of large valves which it would be difficult otherwise to operate upon.

The operation of this invention and its advantages will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed, by those skilled in the art to which it appertains. When the machine is to be used for dressing valve-seats, the cutter is mounted upon the lower end of the spindle or upon the extension of said spindle, as the case may be, and the device is then mounted by means of the clutch 1 upon the casing of the valve or faucet which is to be operated upon. By

loosening the nut 14 the spindle may be readily adjusted by manipulating the tube 9 until the cutter reaches the valve-seat which is to be dressed. The nut 14 may then be tightened, thus retaining the parts of the device in the desired relative position without, however, interfering with the adjustment of the spindle by means of the tube 9 as the cutting progresses. When valve-disks are to be dressed or resurfaced, the auxiliary clutch is mounted upon the lower end of the spindle, and the valve or disk which is to be operated upon is mounted in the said clutch. The machine is then mounted by means of the clutch 1 in the casing 31, and the latter may then be mounted in a vise, where it will be held securely during the operation. The spindle carrying the auxiliary clutch and the valve-disk is then adjusted until the said valve-disk engages the cutter 35, and the spindle may then be revolved by means of a hand-wheel 16, thus causing the surface of the valve to be trimmed by the said cutter, the spindle being gradually fed forward by means of the hand-wheel 10 upon the adjusting-tube 9.

Additional cutters of suitable construction are to be provided for dressing faucets of various constructions, to the dressing or repairing of which my invention may be applied.

I have in the foregoing described what I consider to be the preferred construction of my invention; but I desire it to be understood that I do not limit myself to the precise details of construction herein set forth, but reserve the right to any changes and modifications which may be resorted to without departing from the spirit of my invention.

Having thus described my invention, what I claim is—

1. In a machine of the class described, the combination of a chuck the back plate of which has an upwardly-extending exteriorly-screw-threaded tube, a spindle journaled in said tube and extending through the chuck, a hand-wheel mounted upon the said spindle, and a tube engaging a shoulder near the upper end of the spindle and having an interiorly-threaded portion engaging the exteriorly-threaded tube, upon which it is adjustably mounted, substantially as set forth.

2. In a machine of the class described, the combination of a chuck having an upwardly-extending exteriorly-screw-threaded tube, a spindle mounted revolubly in said tube and having a hand-wheel at its upper end, an adjusting-tube having a hand-wheel at its upper end engaging a shoulder formed upon the spindle below the hand-wheel of the latter, said adjusting-tube being provided with an interiorly-threaded portion engaging the exteriorly-threaded tube of the chuck, and a tightening-nut mounted upon a tapering exteriorly-threaded and longitudinally-slotted portion of the adjusting-tube, substantially as and for the purpose set forth.

3. In a machine of the class described, the combination, with the chuck having an upwardly-extending tube, of a spindle mounted revolubly in the said tube and having a hand-wheel the rim of which is provided with recesses, and means for adjusting the said spindle longitudinally, substantially as and for the purpose set forth.

4. In a machine of the class described, the combination of a chuck having an upwardly-extending tube, a spindle mounted revolubly in said tube and having a shoulder near its upper end, the adjusting-tube mounted exteriorly upon the tube extending from the chuck and having a hand-wheel engaging the shoulder of the spindle, a hand-wheel mounted upon the latter above the hand-wheel of the adjusting-tube, and a nut mounted upon the spindle above the hand-wheel of the latter and adapted to force the said hand-wheel in a downward direction to take up slack caused by wear upon the spindle, substantially as herein shown and specified.

5. In a machine of the class described, the combination, with the chuck having a revoluble and longitudinally-adjustable spindle provided at its lower end with a screw-threaded stem, of an extension-rod provided at one end with a threaded recess to engage the said stem and at its opposite end with a screw-threaded stem, said extension-rod being provided with a transverse perforation, substantially as and for the purpose set forth.

6. In a machine of the class described, the combination, with a chuck having a revoluble and longitudinally-adjustable spindle extending between the radially-adjustable jaws of said chuck, of an auxiliary chuck adapted to be mounted detachably upon the lower end of the said spindle and having radially-adjustable jaws, the lower ends of which are screw-threaded on their inner and outer sides, substantially as and for the purpose set forth.

7. The combination, with the chuck having a revoluble and longitudinally-adjustable spindle, of an auxiliary chuck mounted detachably upon the lower end of said spindle, and a casing adapted to be engaged by and firmly connected with the main chuck, said casing having a conical or tapering portion provided with a longitudinal slot or side opening, and a cutter mounted adjustably in the said slot, substantially as and for the purpose set forth.

8. In a machine of the class described, the herein-described disk-dressing attachment, the same comprising a casing having a conical or tapering portion provided with an exterior rib adapted to be mounted in a vise, a longitudinal slot or side opening, and a cutter mounted adjustably in the said slot, substantially as set forth.

9. The disk-dressing attachment comprising a casing having a tapering portion provided with a slot or side opening and a seat formed adjacent to the said slot, in combination with the cutter having transverse slots to receive screws, by means of which it is mounted upon the said seat, and screws in-

serted into the outer side of said seat and having heads bearing against the outer edge of the said cutter, substantially as and for the purpose set forth.

10. In a machine of the class described, the combination of a chuck having a revoluble and longitudinally-adjustable spindle provided with a hand-wheel and means for feeding and longitudinally adjusting said spindle, an auxiliary clutch mounted detachably upon the lower end of said spindle, a casing interiorly screw-threaded at its upper edge to be engaged by the radially-adjustable jaws of the main clutch and having a tapering or conical portion at its lower end provided with a longitudinal slot or side opening, and a cutter mounted adjustably in the said slot, substantially as and for the purpose herein set forth.

11. In a machine of the class described, the combination, with a chuck having a revoluble and longitudinally-adjustable spindle provided with a screw-threaded stem at its lower end and means for feeding and adjusting the said spindle, of a cutter adapted to be mounted detachably upon said spindle, said cutter consisting of an oblong bar having a screw-threaded recess to engage said spindle and provided on opposite sides of said recess with oppositely-inclined teeth, substantially as and for the purpose herein set forth.

12. The combination, with the herein-described machine comprising, essentially, a chuck having a revoluble and longitudinally-adjustable spindle provided with a screw-threaded stem at its lower end, of a cutting-tool consisting of an oblong bar having a screw-threaded recess and provided on opposite sides of said recess with longitudinal, parallel, and oppositely-inclined teeth, substantially as herein described, and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

CHARLES L. MORSE.

Witnesses:
OSCAR A. SCOTT,
WM. T. GIBBS.