

No. 748,339.

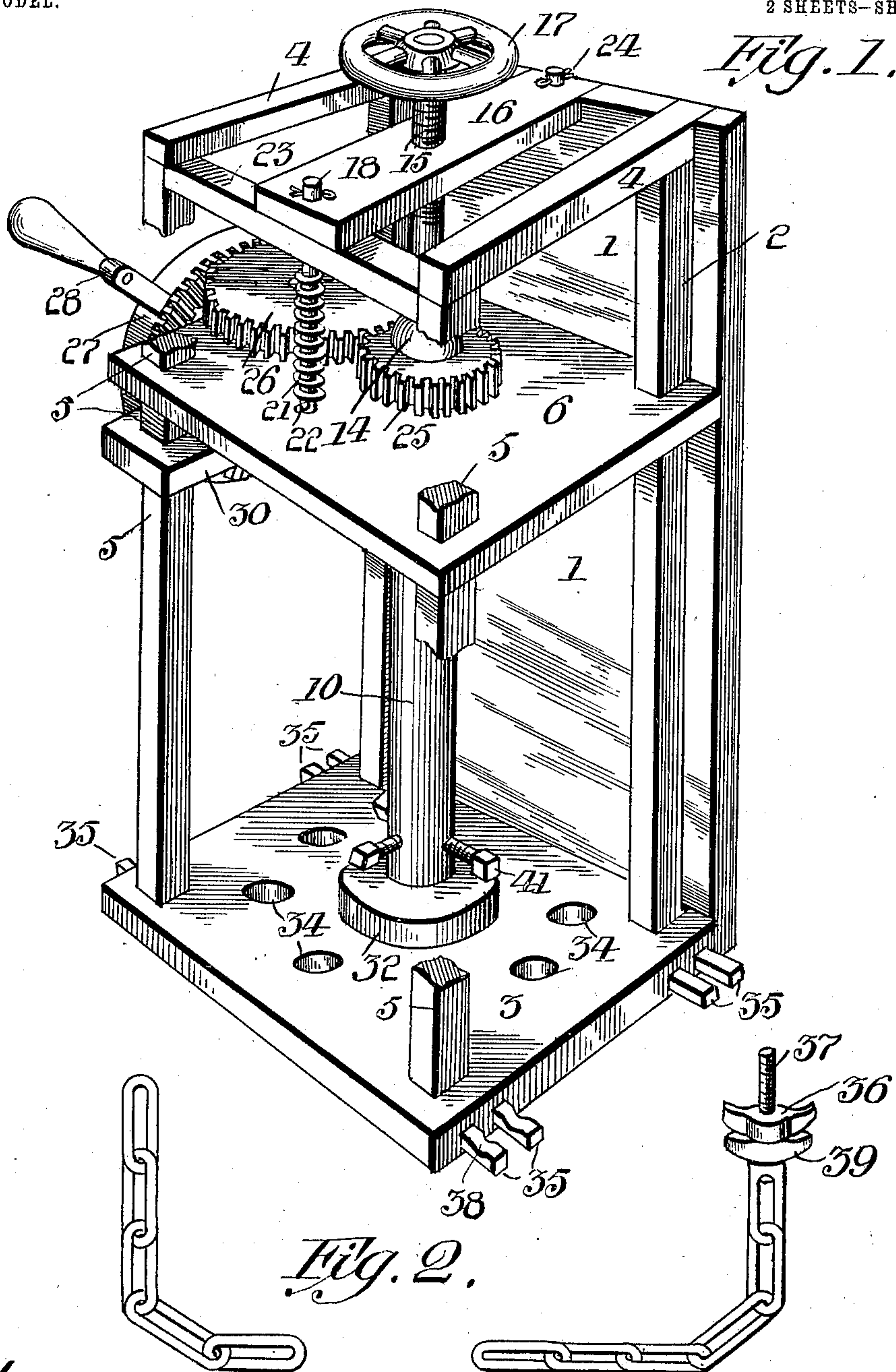
PATENTED DEC. 29, 1903.

B. F. BARTRUG.
GRINDING MACHINE.

APPLICATION FILED AUG. 26, 1903.

NO MODEL.

2 SHEETS--SHEET 1.



Witnesses:
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Attorneys.

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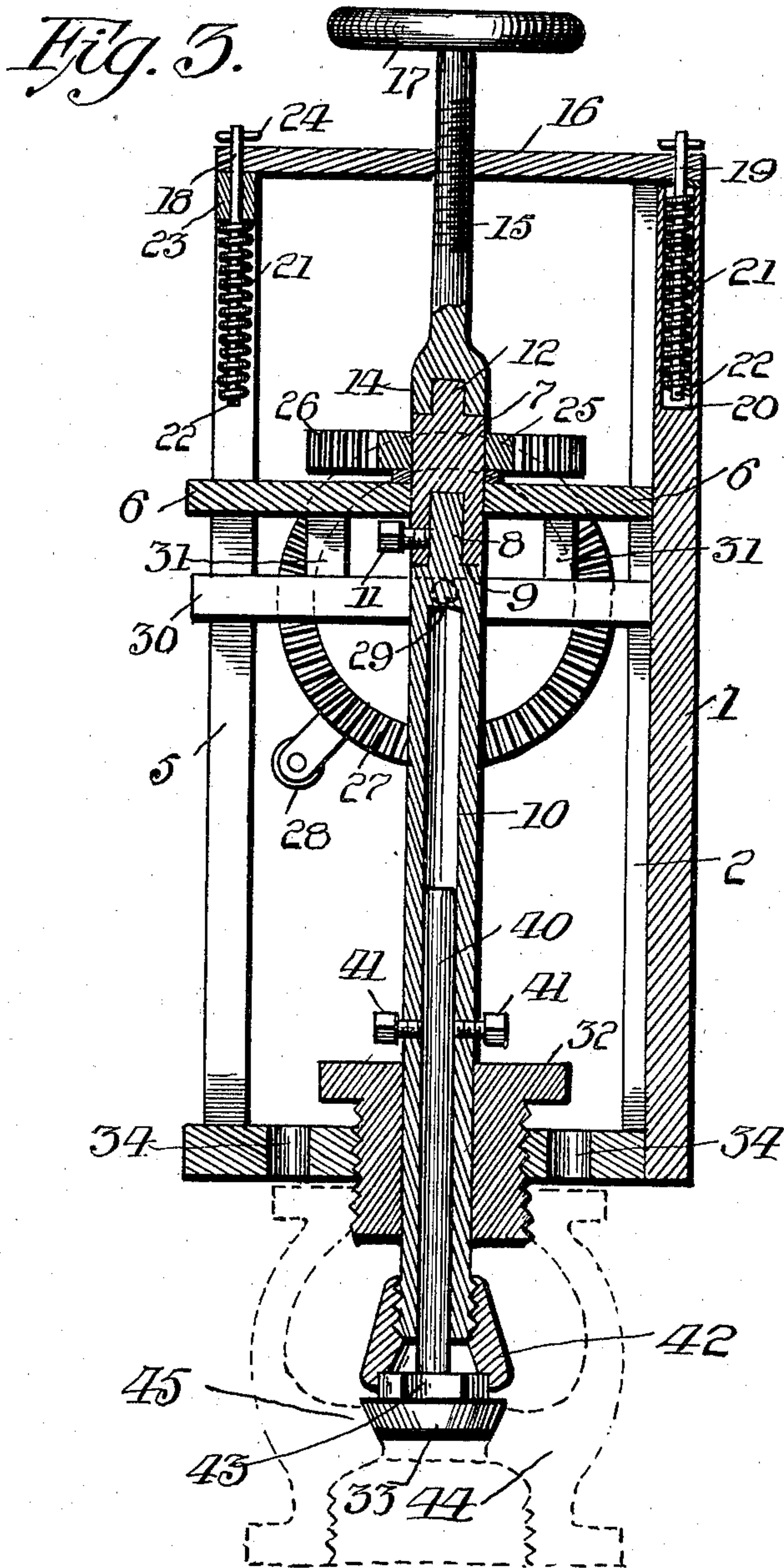
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UNITED STATES PATENT OFFICE.

BENJAMIN F. BARTRUG, OF ROSS, WEST VIRGINIA.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 748,339, dated December 29, 1903.

Application filed August 26, 1903. Serial No. 170,844. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. BARTRUG, a citizen of the United States of America, residing at Ross, in the county of Wetzel and State of West Virginia, have invented certain new and useful Improvements in Grinding-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in the art of grinding valves and valve-seats; and the invention relates specifically to an apparatus or device for grinding valves and valve-seats, and has for its object to construct a device capable of being used in any position in which the valve may be placed whereby to materially facilitate this class of work.

A further object of the invention is to construct a device of this character by the aid of which the valve and the valve-seats are simultaneously ground to insure a perfect fit thereof; furthermore, to construct a device or apparatus which may be readily adjustable to conform to the different styles of valves and by the aid of which the said different styles of valves and valve-seats may be readily ground.

The invention resides in the novel construction, combination, and arrangement of parts, to be hereinafter more fully described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference indicate like parts throughout the several views, in which—

Figure 1 is a perspective view partly broken away. Fig. 2 is a plan view of a part of the tie-chain which may be employed for holding the device in position. Fig. 3 is a vertical sectional view, showing a valve in dotted lines.

In the drawings the apparatus is shown in a vertical position, though the device is by no means confined to use in this position, as it may be operated as conveniently in a horizontal position, in an inclined position, or a reverse vertical position from that shown in the drawings.

According to the position in which the device is being shown, the same comprises a

base or back board 1, on which is mounted adjacent the outer edges the slide-rails 2. These slide-rails connect at their forward ends with the end plate 3 and at their rear ends with posts 4, and connected to the outer ends of these posts and to the front plate 3 are upper slide-rails. Mounted to slide on the upper slide-rails 5 and lower slide-rails 2 is the cross head or plate 6, centrally apertured to receive the stub-shaft 7. This stub-shaft at its inner end is provided with a socket 8 to receive the reduced end 9 of the hollow mandrel 10, the said mandrel being suitably secured in the socket end of the stub-shaft, as by set-screws 11, or other approved means of connection. The shaft 7 has a reduced end 12, which engages in the socket end 14 of the tension-regulating stem 15, which stem is threaded through the tension-bar 16 and is provided on its outer end with a suitable handle or wheel 17. The tension-bar 16 is mounted on rods 18 19, the latter extending into the recess 20 in the base or back board 1 and having a spring 21 arranged on the pin within the said recess, and in the rod 18 is a like spring 21, arranged between the pin 22 and the inner end of the rod 18 and the cross-piece 23, which connects the upper slide-rails 5. Pins 24 pass through the outer ends of rods 18 19 and prevent the tension-bar 16 being disengaged from said rod. Mounted on the stub-shaft 7 is a pinion 25, which meshes with gear 26, carried by the cross head or plate 6. This gear 26 meshes with driving-gear 27, which is provided with a suitable crank or handle 28 and is carried on the shaft 29, (see dotted lines in Fig. 3,) which shaft is carried on a standard 30, which is mounted to slide on one of the rails 5 and one of the rails 2, and is connected to the cross head or plate 6 by braces 31. The stub-shaft 7 and the hollow mandrel 10 revolve in unison, due to their being connected by set-screw 11, and the reduced end 12 of the stub-shaft turns in socket 14 of the tension-stem.

The hollow mandrel 10 extends through a threaded follower 32, mounted in the front plate 3, and in practice I preferably extend this follower a sufficient distance, so that if desired it may be threaded into the opening in the valve-body 33.

The device or apparatus is adapted to be

securely connected in position for grinding in various ways, that of threading the end of the follower 32 into the valve being one way of holding the device in position. Other means of holding the device have, however, been shown, one of these consisting in providing the front plate 3 with a series of apertures 34, through which bolts may be attached for securing the end plate against any desired object. I also provide a front plate in its side edges with pins 35, to one of which one end of the chain may be attached and this chain then wrapped around the article and around the other of the pins and its end placed between two said pins and tightened by the winged nut 36, carried on screw 37 on one end of said chain. I preferably form one pair of the pins 35 with seats 38 to receive the washer 39, carried by said chain, so as to hold the same in engagement with said pair of pins.

As heretofore stated, the valve and the valve-seat are to be ground at the same time, and to accomplish this I detach the handle or wheel on the end of the valve-stem and insert this valve-stem 40 in the hollow mandrel 10, as seen in Fig. 3, securing the same by set-screw 41 or other approved means. On the end of the hollow mandrel 40 I thread a socket 42, which receives the nut 43 on the valve-stem, and thus hold the valve 44 against rotation independent of the mandrel 10. This valve-stem and valve is also held by the set-screws 41. Oil and emery or other grinding substance is placed on the valve 33, and as the latter is rotated its engagement with the seat 45 grinds this seat at the same time that the valve 44 is being ground, due to the action of the faces of the valve and the valve-seat against each other. By unscrewing the bar 16 it will be observed that the tension with which the valve is forced against the seat may be decreased and that this tension may be increased, as desired, by the screwing up of the stem, so as to force the mandrel toward the valve-seat. After being secured in position and properly aligned it will be observed that the mandrel may be driven at a rate of speed through the driving means, such as shown, which will serve to rotate the valve at a speed which will materially facilitate the operation of grinding over that which is obtained by the ordinary method, which is to attach the parts to the end of the valve-stem to rotate the latter. It is to be noted also that an emery or other like stone may be placed against the end plate 3, with a seat in same to receive a valve secured on the mandrel, while for seats that are notched or cut an emery-stone may be placed on the end of the mandrel corresponding in

shape and size of the valve. Such arrangement permits the grinding of all valves in use and which have developed bad leaks.

As herein shown and described, the device is adapted for use in connection with an ordinary globe-valve, though it is to be noted that the device is adapted to be used in connection with any form of valve which it may be desired to grind.

It will be understood, of course, that in grinding the different forms of valves means will be provided for holding the particular style of valve on the mandrel and that such slight changes may be made without departing from the general spirit of my invention.

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

1. In a device for grinding valves and valve-seats, the combination of a substantially rectangular frame, a hollow mandrel carried thereby to receive the valve-stem, means for securing said valve-stem in the hollow mandrel, and means for rotating said mandrel, a follower encircling said mandrel and being threaded in the frame, substantially as described.

2. In a device of the character described, a rotatable hollow mandrel adapted to receive the valve stem, and means for securing the valve-stem in the mandrel, a socket removably arranged in the lower end of the mandrel for engagement with the valve, of means for rotating said mandrel, and tension-regulating means engaging said mandrel, substantially as described.

3. In a device of the character described, a rectangular frame, including an upper and lower slide-rail, a movable cross head or plate on said rails, a mandrel mounted for rotation in said plate and in the front plate of the frame, means for rotating said mandrel, means for securing a grinder to said mandrel, and means for securing the frame in position, substantially as set forth.

4. In a device of the character described, a rotatable mandrel, comprising in combination with a supporting-frame, a resiliently-mounted cross-head, and a screw operating in said cross-head and engaging the mandrel, tension-regulating means engaging said mandrel, means for securing a grinder to the mandrel, and driving means for said mandrel, substantially as described.

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

BENJAMIN F. BARTRUG.

Witnesses:

WILLIAM AKINS,
WILLIAM H. GATHERS.