

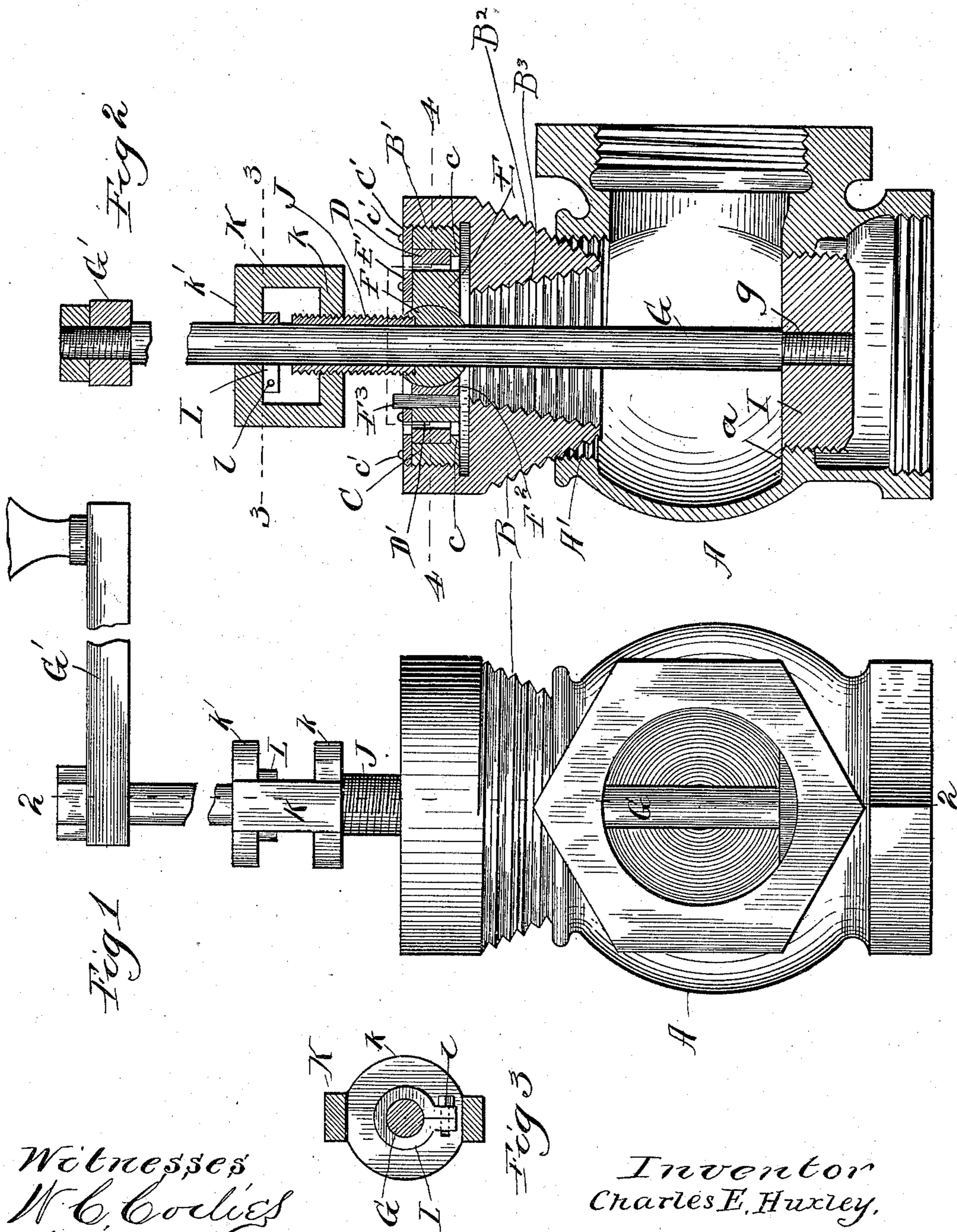
(No Model.)

2 Sheets—Sheet 1.

C. E. HUXLEY.
VALVE REMODELING DEVICE.

No. 598,662.

Patented Feb. 8, 1898.



Witnesses
W. C. Coates
Harold G. Barrett.

Inventor
Charles E. Huxley.

by Poole & Brown
his Attys

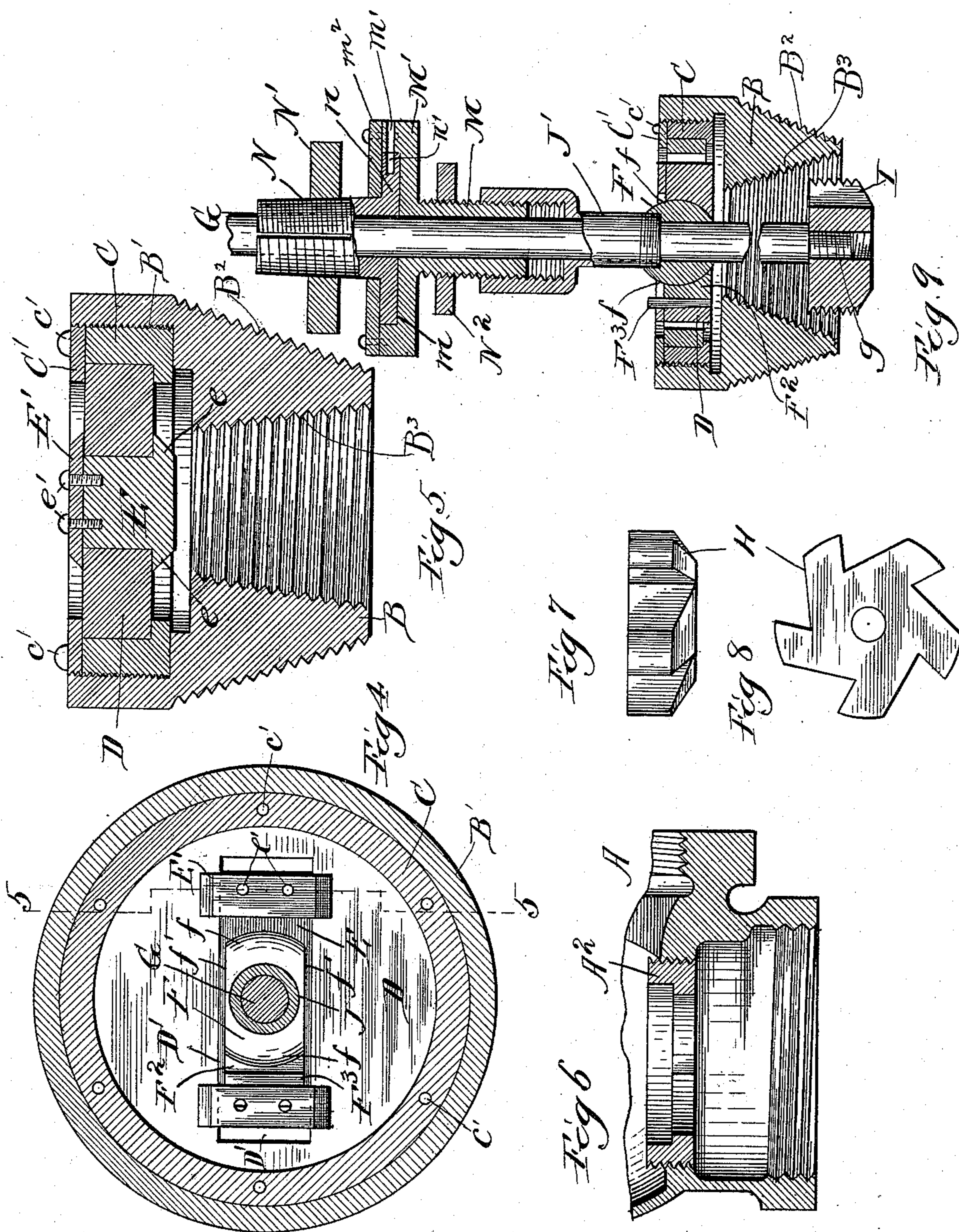
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2 Sheets—Sheet 2.

C. E. HUXLEY.
VALVE REMODELING DEVICE.

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Witnesses
W. C. Colver
Harold Bennett

Inventor
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UNITED STATES PATENT OFFICE.

CHARLES E. HUXLEY, OF AURORA, ILLINOIS, ASSIGNOR OF TWO-THIRDS
TO FREDERICK WAHL, SR., AND GEORGE E. RICKER, OF QUINCY,
ILLINOIS.

VALVE-REMODELING DEVICE.

SPECIFICATION forming part of Letters Patent No. 598,662, dated February 8, 1898.

Application filed June 10, 1897. Serial No. 640,136. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HUXLEY, of Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Valve-Modeling Devices; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improved device in the nature of a hand-tool for remodeling valve-seats; and it consists in the matters hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a view in side elevation of a valve, together with an implement embodying my invention applied thereto in position for operation. Fig. 2 is a sectional view taken on line 2 2 of Fig. 1. Fig. 3 is a detail section taken on line 3 3 of Fig. 2. Fig. 4 is a detail section taken on line 4 4 of Fig. 2. Fig. 5 is a sectional view taken on line 5 5 of Fig. 4. Fig. 6 is a sectional view showing a part of a valve-case with an inserted valve-seat, such as is adapted to be inserted by my improved implement. Fig. 7 is a side elevation of a cutting-tool adapted for use in connection with the implement. Fig. 8 is an end view of said cutting-tool. Fig. 9 is a sectional view of the implement when made in a somewhat different form from that before described.

As shown in said drawings, A indicates a valve-casing, such as that of an ordinary globe-valve, the same being provided with a valve-seat *a* and a screw-threaded opening A', in which is inserted the head which carries the valve-spindle.

B indicates a hollow, tapered, and externally-screw-threaded plug which is adapted for insertion in and engagement with the opening A' of the valve-casing and which serves to support or sustain the other parts of the implement in position for action upon the valve-seat. Said hollow plug B is provided in its outer portion with a cylindric screw-threaded recess B', within which fits a removable ring C, having external screw-

threads fitting those of the said recess and serving as a means of retaining the holding-ring in place within the said plug. Within said ring C is mounted a circular plate or disk D, the same being mounted in the ring in such manner that it may be rotated therein or clamped rigidly there when desired. As herein shown, the ring C is provided with an internal cylindric surface fitting the cylindric peripheral surface of the plate and has adjacent to its inner face an inwardly-projecting rib *c*, engaging the adjacent face of the disk D, and a separate confining-ring C' is secured by screws *c'* against the outer face of the said ring C, the confining-ring being adapted to project over the margin of the disk and the parts being so proportioned that when the screws C' are tightened the ring will be clamped against the disk and hold the same rigidly from movement. In the said disk D is formed a transverse slot D', Figs. 4 and 5, in which slot is located a sliding block E, which block is made of a width to fit closely between the side walls of the slot, but of a length considerably shorter than the slot, so that the block may have endwise movement in the slot. As a means of confining the said block within the slot, the block is shown as made thicker than the disk D and as provided at one side with flanges *e e* and at its opposite side with a removable plate E', which is wider than the body of the block and projects at the side of the same to overlap the adjacent surface of the disk. Said plate E' is secured by screws *e' e'* to the block E, and the parts are so proportioned that the said plate may be tightened against the disk for the purpose of holding the block from movement in the slot when adjusted to the desired position therein. Mounted centrally within the block E is a swivel-plate F, having curved end faces *f f*, which engage the correspondingly-curved surfaces of a socket in the block E, said curved surfaces being struck from a common center, so that the swivel-plate F is adapted to swing in the block E in a plane parallel with the sides of the block. The swivel-plate is preferably provided with flat side faces *f'*, parallel with the side faces of the block E, as clearly seen in Fig. 4. The said curved end faces of the swivel-plate may be either cylindric

segments or spherical segments, the latter construction being that employed in the form of the implement shown in the accompanying drawings.

5 G indicates a shaft or spindle which passes centrally through the swivel-plate F and is provided at one end with a hand-crank G', by which it may be turned or actuated, and has
10 g for the attachment of a cutting-tool, such as the cutting-head H (shown in Figs. 7 and 8) or the short tap I. (Shown in Figs. 2 and 9.) The swivel-plate F, together with the sliding block E, disk D, and ring C, constitute a
15 means for adjustably supporting the spindle G in proper position with respect to the valve-seat to be operated upon, and in order to enable the swivel-plate to be rigidly secured from movement or turning in the block E a
20 clamping device for said swivel-plate is provided, which is shown in the accompanying drawings as made as follows:

The slot or opening of the plate E is extended at one side of the swivel-plate, and in
25 said slot is inserted a bearing-piece F², having a concave surface fitting that of the swivel-plate and adapted to bear against the same, and a wedge F³, which is inserted between the said bearing-piece and the end wall of the
30 slot. Said wedge serves as a means of tightening the bearing-piece against the swivel-plate, the wedge being driven in tightly between the parts, so as to hold the swivel-plate from movement when the spindle has been adjusted
35 to the desired inclination with respect to the valve-seat to be operated upon. In connection with the device for adjustably supporting the actuating - spindle above described I have herein shown a feed device
40 by which the tool attached to the spindle may be fed or advanced to the work as the same progresses, one form of such feed device being shown in Figs. 1 and 2 and another form in Fig. 9.

45 Referring first to the form shown in Figs. 1 and 2, J indicates a screw-threaded sleeve which is secured in the swivel-plate F and surrounds the part of the spindle adjacent and exterior to said swivel-plate. Said screw-
50 threaded sleeve J engages the lower end of a yoke K, which engages the spindle at a point above the sleeve and is adapted to turn freely on said spindle, said yoke having a lower portion or collar k, which engages the screw-
55 threaded sleeve, and an upper portion or collar k', which engages the spindle and connecting parts, extending between collars and rigidly connecting the same. Mounted upon the spindle below and in contact with the upper
60 collar k' of the yoke K is an adjustable collar L, herein shown as consisting of a split ring provided with a clamping-screw l, by means of which the ring may be tightened on the spindle and thereby held from movement
65 thereon. Said collar L serves as a shoulder or abutment against which the upper part of

the yoke K acts when the yoke is screwed downwardly upon the sleeve J in such manner as to force or draw downward the spindle G and thereby force or carry the cutting-tool
70 against the valve-seat which is being operated upon.

Referring now to the form of feeding device shown in Fig. 9, J' indicates a sleeve which is attached to the swivel-plate F in the same
75 manner as before described in connection with the sleeve J. Said sleeve J', however, is enlarged and made of tubular form at its upper end and is adapted to receive the lower
80 end of a screw-threaded sleeve M, which is mounted to turn on the spindle above the sleeve J'. Said sleeve M is attached to a disk M', which is provided in its top or outer surface with a concentric recess m, in which fits
85 an outwardly-projecting flange n, formed upon a sleeve N, which also surrounds the spindle, the flange n being confined within the recess by means of a cap-plate m², secured to the margin of the disk M' in the manner
90 illustrated. Said sleeve N, which projects upwardly from the disk M', is externally tapered and screw-threaded and is also split longitudinally and provided with a nut N', which when screwed down over the tapered,
95 split, and screw-threaded upper portion of the sleeve serves to clamp the same upon or against the spindle. The connection, described between the disk M' and the sleeve N obviously constitutes a swivel-joint which
100 permits the said disk and the sleeve M to be turned freely on the spindle when the sleeve N is secured thereto, and said sleeve M having screw-threaded engagement with the sleeve J' it follows that by turning the disk
105 M' the spindle will be forced or carried downwardly through the sleeve J' and the swivel-plate and thus fed forward to the work. Obviously the sleeve N may be shifted backward or forward on the spindle when necessary by loosening the nut N' and again tightening
110 the same when the sleeve has been moved to a desired point on the spindle. A stop-nut N² is applied to the spindle M and may be adjusted to any desired position thereon, so as to come in contact with the upper
115 end of the sleeve J', and thereby limit the inward movement of said sleeve in feeding forward the tool to its work.

The flange n is provided with a hole n', which may be brought opposite a hole m' in
120 the disk M', when the end of a rod or other suitable implement may be inserted into said hole n' to hold the sleeve N from turning in the act of tightening or loosening the nut N' on the said sleeve. As a further improvement
125 in devices of this character the plug B is provided not only with a tapered externally-screw-threaded surface B², but also with an internal tapered screw-threaded surface B³, adapted to fit over and engage an externally-
130 screw-threaded tubular projection or neck on a valve-casing, thereby adapting the plug for

attachment to valve-casings having both internally and externally screw-threaded openings.

Figs. 2 and 6 illustrate the character of work which may be done by the use of the implement described, the valve there shown having been originally an ordinary globe-valve, with the usual conical seat made integral with the walls of the valve-casing. In the use of the implement on this valve the seat has been first reamed out or enlarged by the cutting-tool H, then provided with a screw-thread by means of the tap I, as seen in Fig. 2, and a screw-threaded bushing A², Fig. 6, then inserted to form a new valve-seat. The device for adjusting the inclination of the spindle with respect to the supporting device and the valve-seat is intended more particularly for use in remodeling valves of that class in which the seats are arranged at an angle with respect to the opening in the valve-casing—such, for instance, as the gate-valves, in which the moving part of the valve is of tapered form and enters between two oppositely-inclined valve-seats in a familiar manner. The devices for adjusting the angle of the spindle are, however, also useful in other cases, inasmuch as they afford a means of bringing the spindle accurately in position with respect to the central axis of the valve-seat without regard to the location of the opening in which the supporting-plug B is inserted.

It will of course be understood that in adjusting the angle of the spindle the disk D will be turned in its seat until the slot therein is brought parallel with the plane in which the tool is to be inclined, and the sliding block E is then shifted or moved in said slot to a greater or less distance from the center of the disk in accordance with the inclination required to be given to the spindle in order to bring the cutting-tool accurately in position for its work, it being of course understood that the cutting-tool will preferably be adjusted to operate concentrically with the valve-seat as originally made or formed.

I claim as my invention—

1. An implement for remodeling valves comprising a hollow, tapered plug, a tool-supporting spindle passing through the plug, a bearing for the spindle and means for adjustably supporting the bearing in the plug.

2. An implement for remodeling valves comprising a hollow, tapered supporting-plug,

a tool-supporting spindle and means for mounting the spindle in the plug affording angular adjustment of the spindle.

3. An implement for remodeling valves comprising a hollow, tapered supporting-plug, a tool-supporting spindle passing through the plug, a swivel-disk mounted in the plug and having rotative adjustment therein, a supporting-block mounted in said swivel-plate and a swivel-block affording bearing for the spindle and engaging a socket in said supporting-block and means for clamping the swivel-block rigidly in the supporting-block.

4. An implement for remodeling valves comprising a hollow, tapered plug, a disk-supporting ring removably secured in said plug, a swivel-disk having peripheral engagement with said ring and adapted to be turned therein, clamping means for holding the disk from turning in the ring, a laterally-sliding block mounted in said disk, a swivel-block affording bearings for the spindle and engaging a socket in said sliding block and means for clamping the said swivel-block in the sliding block.

5. An implement for remodeling valve-seats comprising a hollow, tapered plug, a tool-supporting spindle passing through said plug and a feeding device for the spindle comprising a screw-threaded sleeve through which the spindle passes, a split clamping-sleeve having a nut by which its parts may be clamped upon the spindle and having swivel connection with the screw-threaded sleeve and a non-rotative sleeve engaged with said rotative sleeve and with the bearing of the spindle.

6. An implement for remodeling valve-seats comprising a supporting-plug, a tool-supporting spindle rotatively mounted within the plug by means which afford angular adjustment of the spindle, and a cutting-tool detachably secured to the spindle and constructed of such length in proportion to its diameter as to permit of its use angularly within a valve-casing.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

CHARLES E. HUXLEY.

Witnesses:

C. CLARENCE POOLE,
WILLIAM L. HALL.