

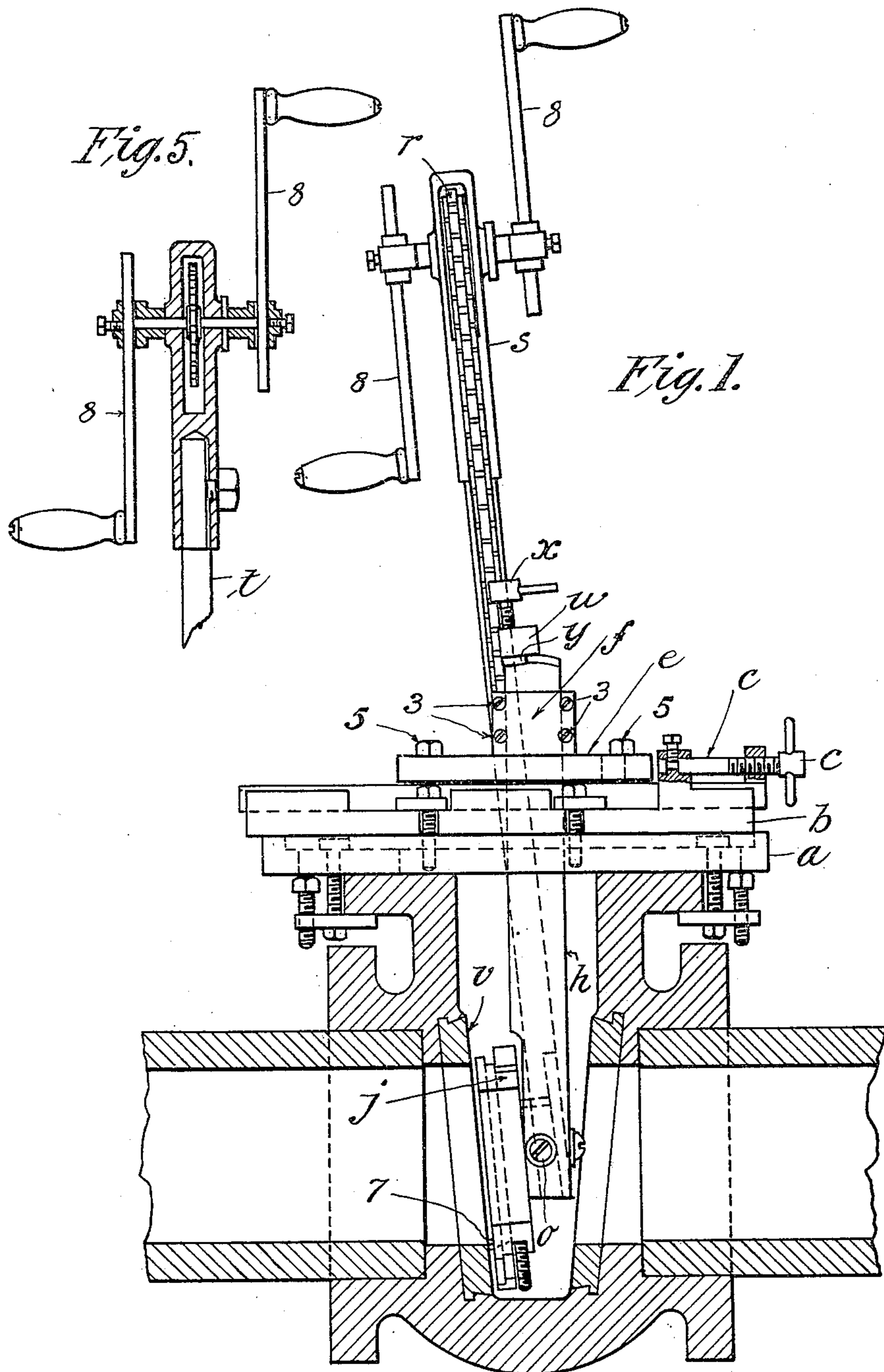
No. 824,321.

PATENTED JUNE 26, 1906.

T. B. WILLIAMS.
VALVE RESEATING MACHINE.

APPLICATION FILED APR. 28, 1905.

3 SHEETS—SHEET 1.



Witnesses:

H. L. Sprague
E. L. Smith.

by

Inventor
Thomas B. Williams
Chapman & Co.
Attorneys.

No. 824,321.

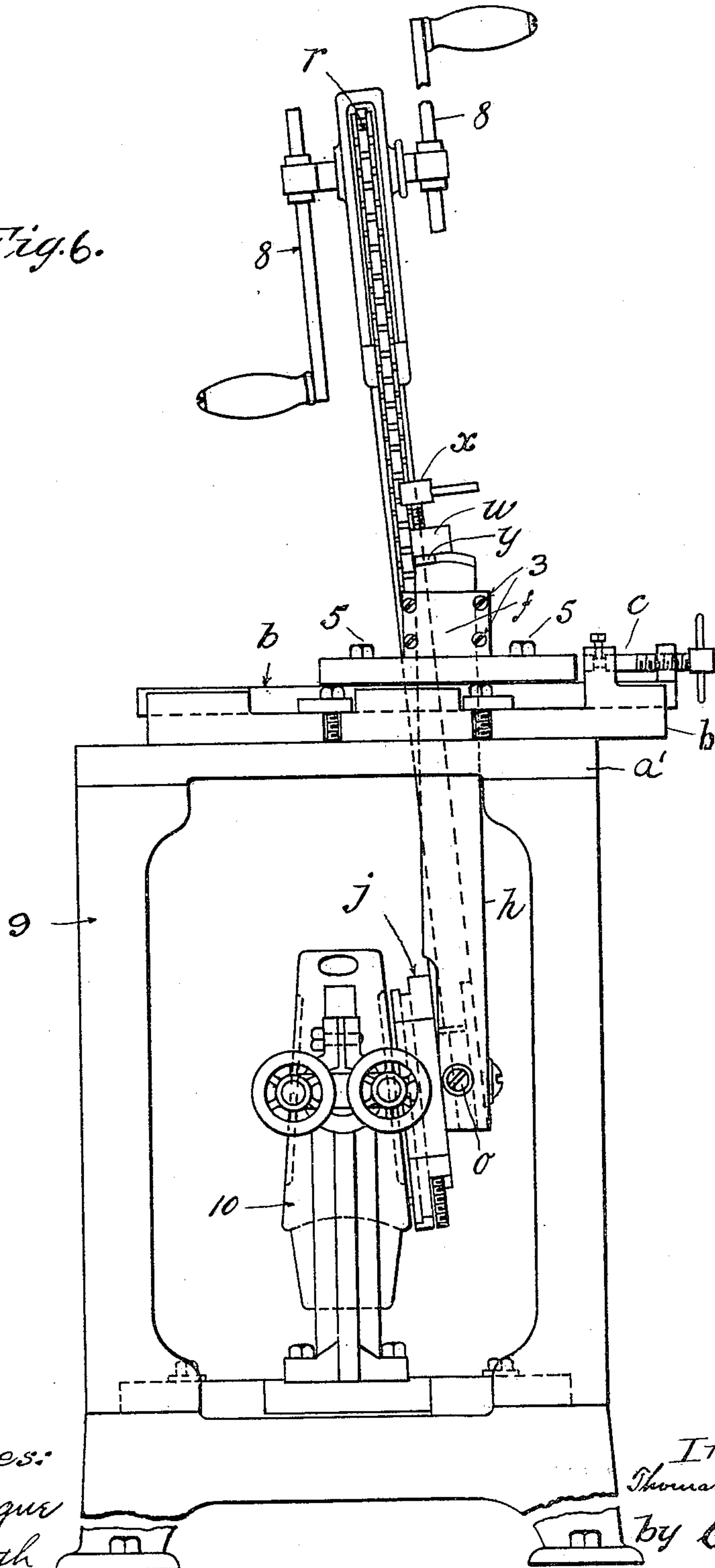
PATENTED JUNE 26, 1906.

T. B. WILLIAMS.
VALVE RESEATING MACHINE.

APPLICATION FILED APR. 28, 1905.

3 SHEETS—SHEET 3.

Fig. 6.



Witnesses:
H. L. Sprague
E. L. Smith

Inventor:
Thomas B. Williams
by Chapman & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

THOMAS B. WILLIAMS, OF ORANGE, MASSACHUSETTS, ASSIGNOR TO THE
LEAVITT MACHINE COMPANY, OF ORANGE, MASSACHUSETTS, A COR-
PORATION.

VALVE-RESEATING MACHINE.

No. 824,321.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed April 28, 1905. Serial No. 257,846.

To all whom it may concern:

Be it known that I, THOMAS B. WILLIAMS, a citizen of the United States of America, residing at Orange, in the county of Franklin and State of Massachusetts, have invented new and useful Improvements in Valve-Reseating Machines, of which the following is a specification.

This invention relates to valve-reseating machines, and is in the nature of an improvement on the construction of the machine described in my prior Letters Patent of the United States, dated October 10, 1905, numbered 801,350, in which a rotatable cutter-head is supported on the lower end of an arm which is hung on trunnions on a bed-plate supported on a suitable base, the arm swinging on the trunnions to adjust the face of the cutter-head to a valve-seat or to the face of a plug. This necessitates the employment of some means to support the lower end of the swinging arm in order to hold the cutter-head in proper operative position relative to the work, because the distance between the head and the supporting-trunnions when the machine is used to face off the seats or plugs of large valves is so great as to cause the arm to spring more or less, and thus do imperfect work.

The object of my present invention is to provide a rigidly-supported arm for the cutter-head and to pivot the latter rotatably at the lower end of said arm, the axis of the trunnions being preferably in the plane of the axis of the head and at right angles thereto, the arm being supported in a bed-plate and being capable of vertical and other adjustments to adapt it to valves of different sizes, and the bed-plate being provided with means to adjust it slidably on a suitable base.

The invention is fully illustrated in the accompanying drawings, in which—

Figure 1 shows in side elevation the mechanism embodying the construction applied to a valve-body, the latter being shown in section. Fig. 2 is a top plan view of the mechanism in the position shown in Fig. 1, a portion of the bed-plate being broken away. Fig. 3 is a front elevation of the rigid supports for the cutter-head and of the latter, the bed-plate and base for the supports being shown in section. Fig. 4 is a side elevation of the parts shown in Fig. 3, the bed-plate be-

ing shown in section in a plane at right angles to that of Fig. 3. Fig. 5 shows in sectional elevation the construction of the support for the driving-sprocket and means to actuate the same. Fig. 6 is a side elevation of the mechanism as applied to the facing off of a valve-plug.

In view of what is disclosed in my said prior patent it has not been deemed necessary to illustrate in this case the detailed construction of the support for the valve-plug nor the detail construction of the cutter-head, for these are essentially the same as shown in that earlier patent, and the means for supporting the arm on which the cutter-head is carried are essentially the same as in said prior patent with the exception of the part which constitutes the immediate support of the arms or arm which carries the cutter-head.

Referring now to the drawings, Fig. 1 shows a base-plate *a*, secured to the top of a valve from which the cap has been removed, and on said base is a bed-plate *b*, which has a sliding movement lengthwise of the base by means of the adjusting-screw *c*. Both the base-plate and the bed-plate are made with centrally-located openings *d* therein, through which the arms carrying the cutter-head may extend, as in my said prior patent.

On the bed-plate *b* is mounted a plate *e*, having two upstanding lugs *f* thereon. The plate *e* is preferably made annular in form, the two lugs *f* being oppositely located thereon and extending slightly over the periphery of the inside border of said annular plate. These lugs *f* are provided with vertical dovetailed grooves *g* therein, in which two arms *h* may slide, and between the lower ends of which arms the cutter-head *j* is pivotally supported to rotate on a fixed axis *k* in the form of a stud secured in a suitable block *m*, which in turn has a swinging movement on the axis, represented by the screws *o*, which extend through each of the arms *h* near the lower end thereof and into said block. Preferably this axis *o* is in the plane of and at right angles to the stud *k*, which constitutes the axis on which the cutter-head rotates.

As described in my said prior patent, this cutter-head is rotated by a sprocket-wheel *p*, over which a chain runs to another sprocket-

wheel *r*, as shown in Figs. 1 and 5, the latter being mounted in a sort of a head *s*, which is secured, as shown particularly in Fig. 5, to the upper end of a rigid arm *t*, which at its lower end is securely fastened to the block *m*, whereby when the arms *h* are rigidly secured in the lugs *f* the swinging of the arm *t* back and forth to oscillate the cutter-head on the axis *o* will serve to adjust the face of the head in parallelism with the inclined face of a valve-seat *v*, this being clearly followed in Fig. 1.

To adjust the cutter-head toward and from the valve-seat, the bed-plate *b* slides on its base, being moved by the screw *c*. To secure the cutter-head in any desired adjusted position, a cross-head *w* is secured to the arm *t* and the upper ends of the arms *h* are curved on the radius of the screws *o*, the cross-head *w* having grooves therein to fit over the said curved ends of the arms, and extending down through the cross-head are two screws *x*, provided with bearing-shoes *y* on their lower ends, and when the arm *t* has been swung to the desired position these screws *x* are turned in to fasten the cross-head securely to the arms *h*, thereby rigidly securing the face of the cutter-head at a desired degree of inclination relative to the valve-seat.

It is seen from the above description that the rigid arms *h* are practically secured together at their lower ends by the block *m*, which carries the cutter-head, and that their upper ends are rigidly secured in the lugs *f* at any desired position of vertical adjustment by means of set-screws 3, and when the arm *t* by means of its cross-head *w* has been secured to the arms *h* in the manner described the whole constitutes a very rigid support for the cutter-head, doing away with the struts, which in my said prior patent extend from the cutter-head to the bottom of the valve-body, the present construction affording a much simpler and more convenient means of adjustment and a much more rigid support for the cutter-head.

As shown in Fig. 2, the plate *e* is made adjustable about a vertical axis by forming the slots 4 therein, through which bolts 5 extend into the bed-plate, to the end that this plate *e* may be adjusted so that the cutter-head will square with the face of the valve-seat horizontally, whereupon the bolts may be tightened and then the head swung on its axis *o* to adjust it to the valve-seat in the vertical plane, as described. If for any reason after the plate *e* has been adjusted on the bed-plate it is desired to remove the same, a scale 6 is provided on the bed-plate, whereby the position of the plate *e* relative to the bed-plate may be noted. This, however, is not an essential feature.

The cutter-head *j* is provided with the cutting-tool 7, which, as in my said prior patent,

is provided with a radial feed device actuated by the rotation of the head and which being embodied in said prior patent requires no description here. Likewise the means for rotating the upper sprocket *r* consists in two crank-arms 8, as described in my prior patent. After the cutter-head has been adjusted to the valve-seat and the latter properly faced off the bed-plate *b*, carrying the cutter-head, in its adjusted position relative to the level of said bed-plate, is then transferred to a suitable frame 9, Fig. 6, having a base-plate *a'*, similar to the plate *a* in Fig. 1, the upper surface of which constitutes a base-plate to receive the bed-plate *b*, which is secured to the base, and then the valve-plug 10, suitably supported in said frame 9, as described in my said prior patent, to permit of its adjustment toward and from the cutter-head, is so adjusted relative to the latter that it may be faced off at the same angle as the valve-seat *v*, both seats and both faces of the valve-plug being operated upon in the manner described in said prior patent.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination in a valve-reseating mechanism of an adjustable bed-plate having an opening therethrough, a rigid support for a cutter-head mounted on the bed-plate and depending therefrom; a cutter-head carried on the inner end of said support below the bed-plate and angularly adjustable thereon on an axis at right angles to the support, said cutter-head being also rotatable on another axis at right angles to the first, together with means to swing the cutter-head, and means to rotate it.

2. In a valve-reseating mechanism, a rotatable cutter-head and a rigid arm to extend into a valve on which the cutter-head is rotatably supported on an axis at right angles to said arm; a supporting-framework for the cutter-head and rigid arm, and having an opening therein and adapted to be secured to the valve-casing whereby the arm is adapted to extend into the valve-casing; means to adjust said rigid arm toward and from the face of the valve-seat, and means to adjust said cutter-head on an axis at right angles to the plane of the adjusting movement of the arm.

3. In a valve-reseating mechanism, a rotatable cutter-head and a rotatably-adjustable rigid arm to extend into a valve on which the cutter-head is rotatably supported on an axis at right angles to said arm; a supporting-framework for the cutter-head and rigid arm, and having an opening therein and adapted to be secured to the valve-casing whereby the arm is adapted to extend into the valve-casing; means to adjust the arm toward and from the face of the valve-seat, and means to adjust said cutter-head on an axis at right

angles to the plane of the adjusting movement of the arm.

4. In a valve-reseating mechanism, a bed-plate having an opening therethrough and
5 adapted to be secured to the valve-casing, a block, a cutter-head carried thereby, an arm extending through the opening in the bed-plate and into the valve-casing and on which arm the block is rotatably mounted whereby
10 the cutter-head may be brought into proper relation with the valve-seat.

5. In a valve-reseating mechanism, a bed-plate slidable toward and from the surface to be operated on, an annular support rotatably
15 adjustable on said bed-plate, an arm rigidly mounted in said annular support and extending through the latter and through an opening in the bed-plate into the valve-body, a rotatable cutter-head carried on the inner
20 end of the arm and mounted on the latter to have a rocking movement on one axis relative to the surface to be operated on, and opposite to the latter.

6. In a valve-reseating mechanism, a bed-

plate having an opening therethrough, a ro- 25
tatable cutter-head, a block, supporting-arms in which the block is pivotally mounted, said cutter-head being rotatably supported on the block, an adjusting-arm secured to the block and extending through the
30 opening in the bed-plate whereby the cutter-head may be brought into parallelism with the valve-seat to be operated upon, and means for locking the same in the adjusted position.

7. In a valve-reseating mechanism, a bed-plate having an opening therethrough and adapted to be secured to the casing, a cutter-head, an arm passed through the bed-plate
on which the cutter-head is rotatably mount- 40
ed on a horizontal axis, said arm being angularly adjustable, and means for locking the same in the adjusted position.

THOMAS B. WILLIAMS.

Witnesses:

FRED A. DEXTER,
JAS. D. KIMBALL.