

(No Model.)

E. LEACH.
MACHINE FOR DECORATING WATCH CASES.

No. 441,495.

Patented Nov. 25, 1890.

Fig. 2.

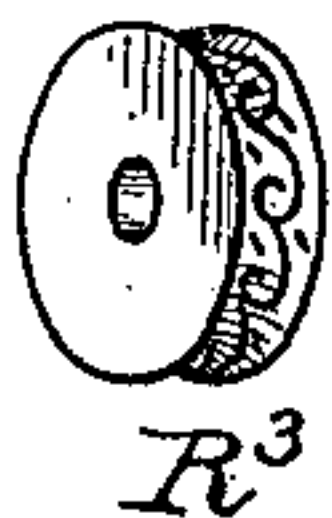


Fig. 3.

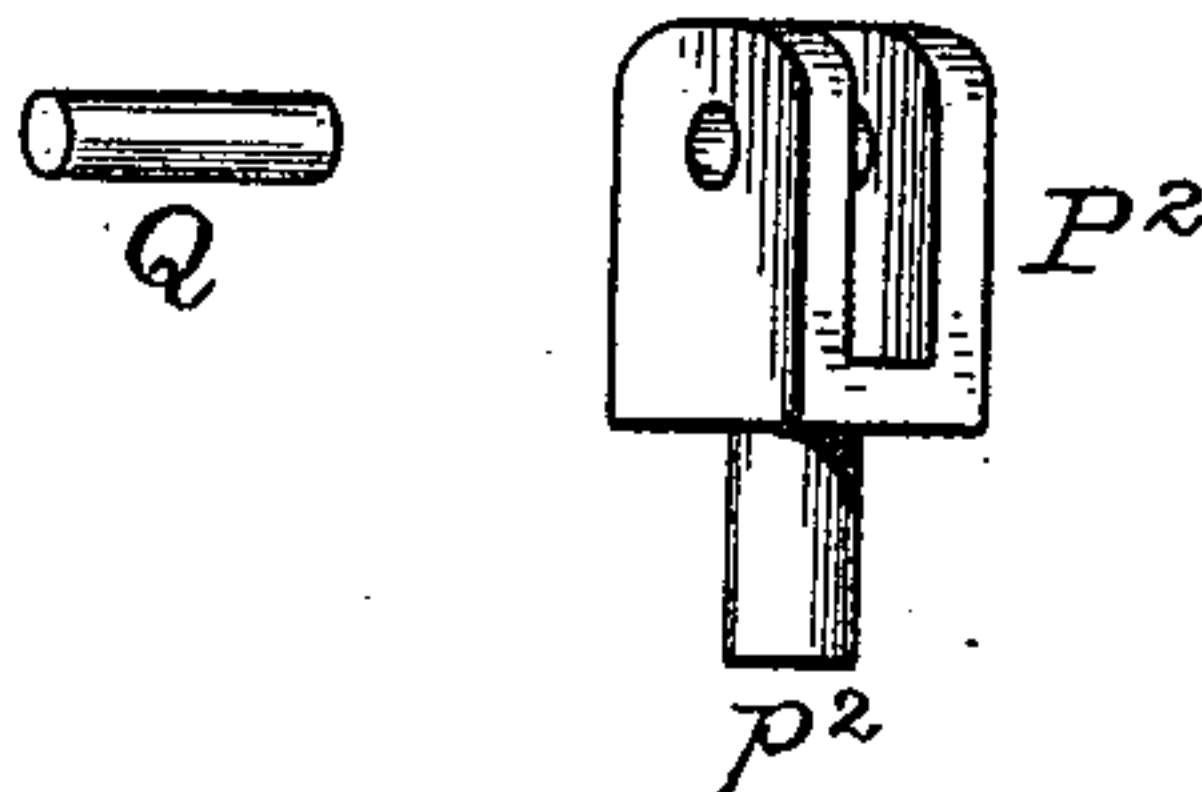


Fig. 1.

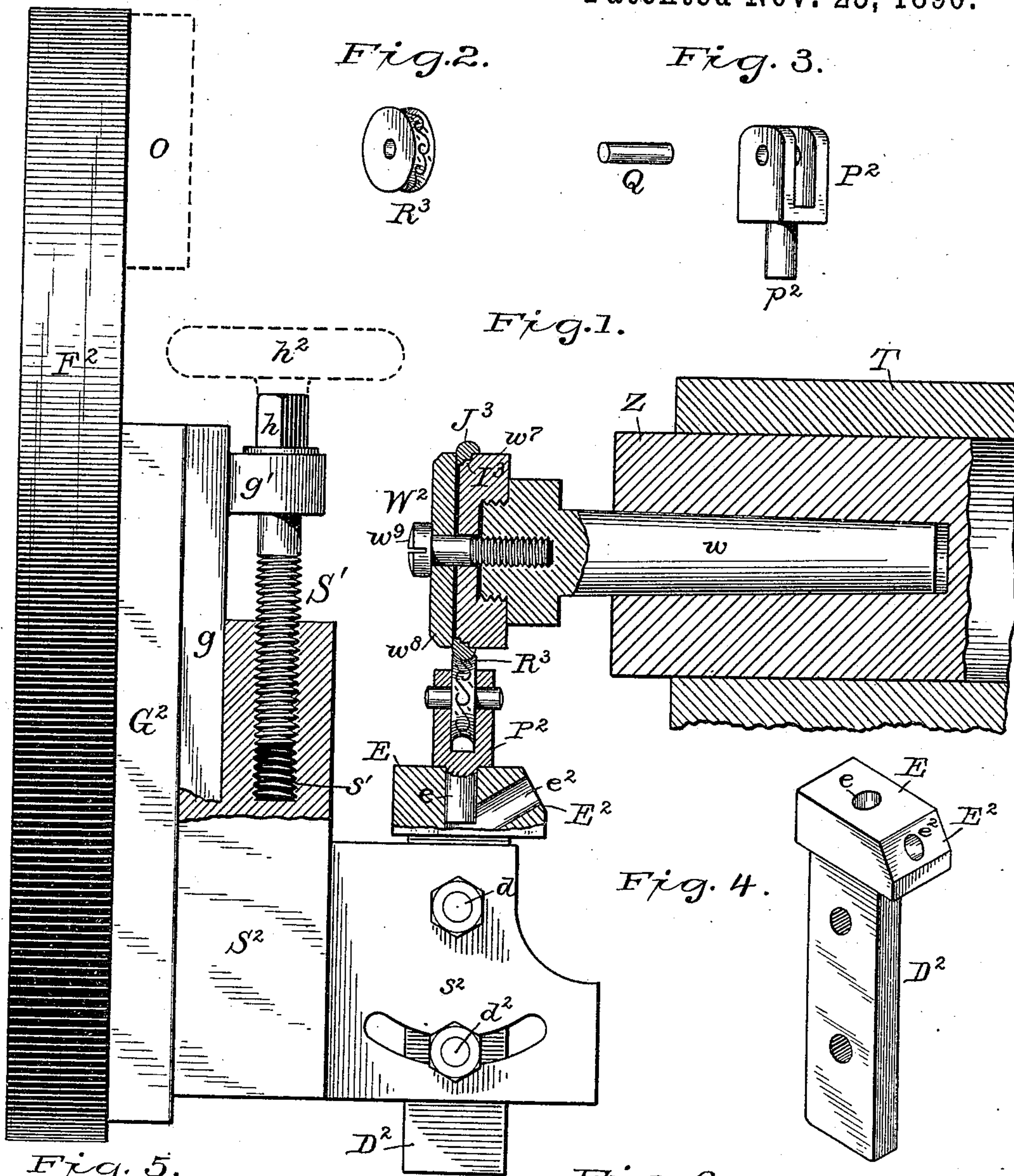


Fig. 4.

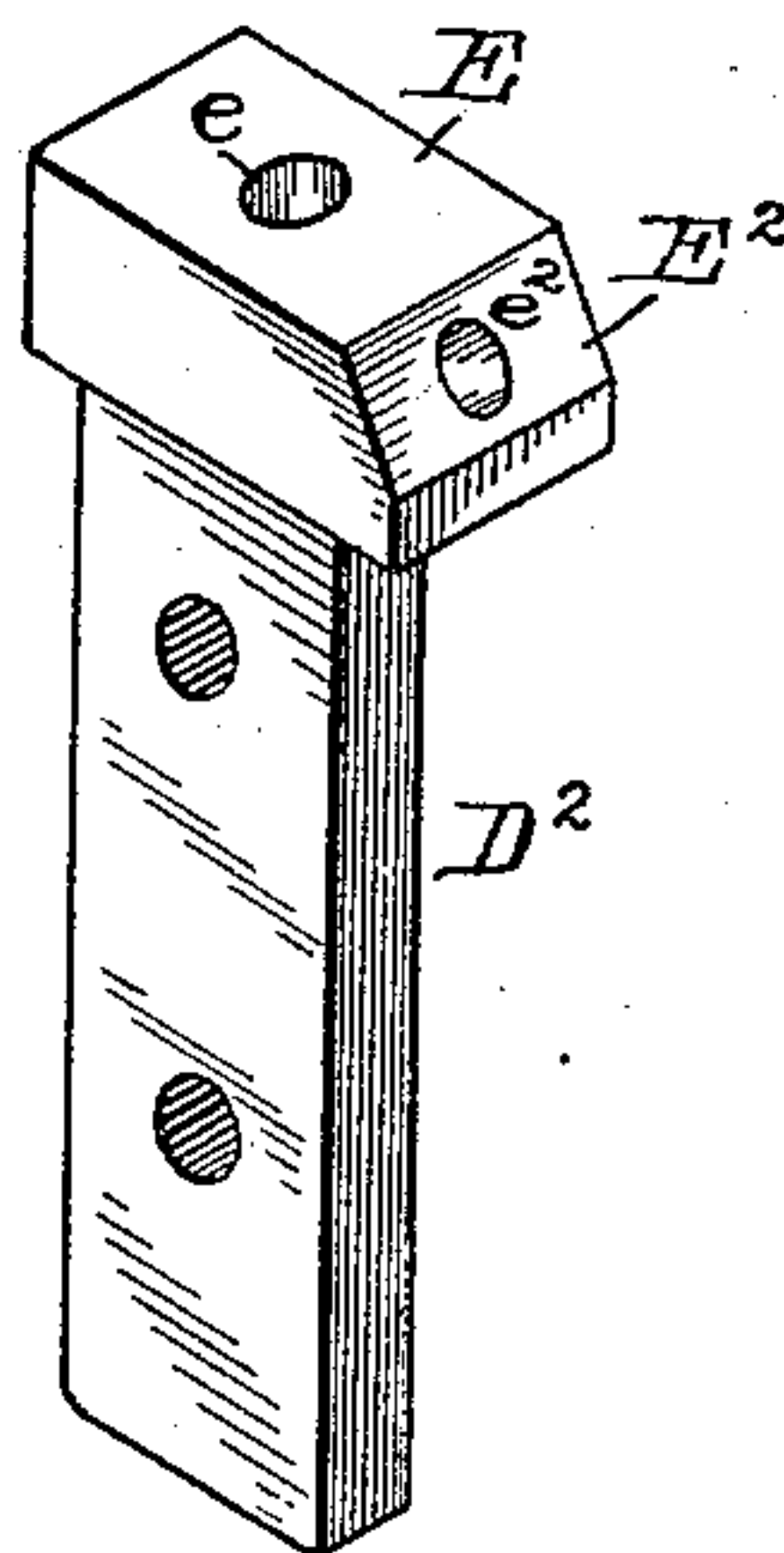


Fig. 5.

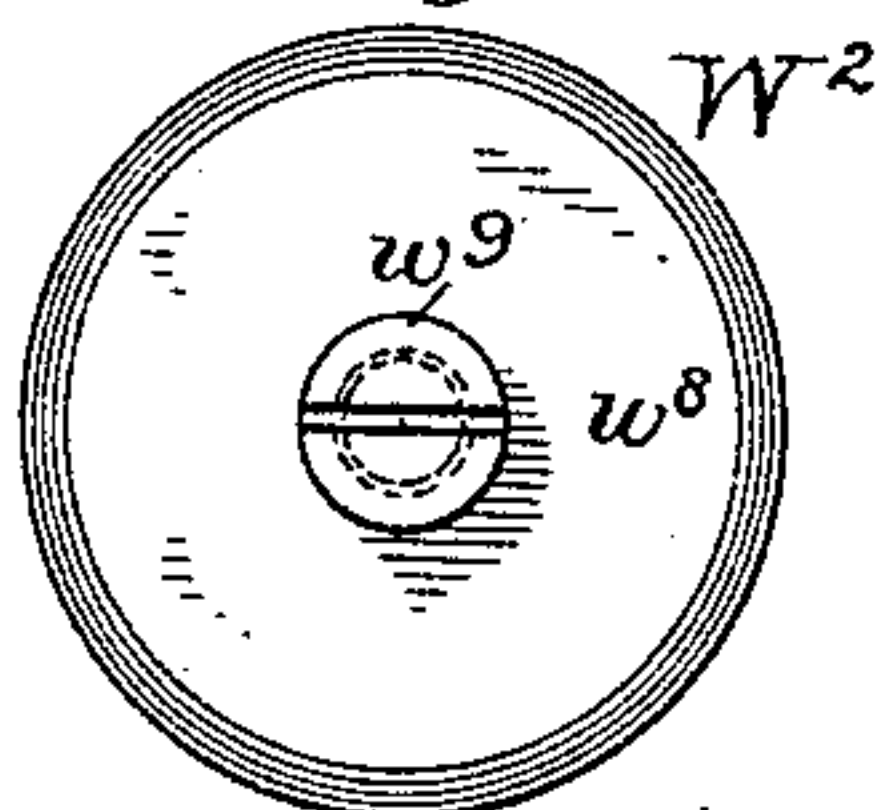
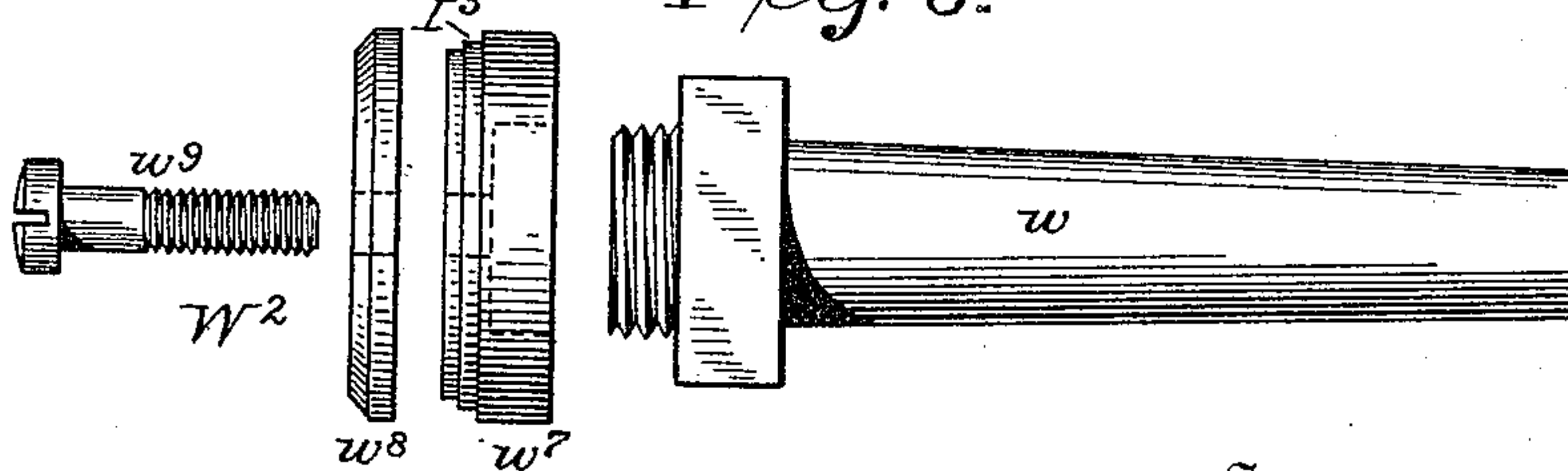


Fig. 6.



Witnesses

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MACHINE FOR DECORATING WATCH-CASES.

SPECIFICATION forming part of Letters Patent No. 441,495, dated November 25, 1890.

Application filed April 14, 1890. Serial No. 347,871. (No model.)

To all whom it may concern:

Be it known that I, EDWIN LEACH, a citizen of the United States, and a resident of Brooklyn, in the State of New York, have invented a new and useful Improvement in Machines for Decorating Watch-Cases, of which the following is a specification.

This invention is additional to the improvements in machines for decorating watch-cases set forth in my application for patent filed January 6, 1888, Patent No. 425,807, and my application for patent filed September 10, 1888, Patent No. 425,809.

The present invention relates to means for carrying into effect the method set forth in my application for patent filed June 30, 1888, Patent No. 425,808, as applied to watch-case "centers;" and it consists in certain novel combinations of parts, hereinafter set forth and claimed, whereby such centers are readily clamped and suitably supported for decoration, and whereby suitable design-transferring roller-dies, or "die-rolls," as they are hereinafter termed, are effectively applied to the peripheral surfaces of said centers, the principal devices being adapted for use alternatively in connection with interchangeable parts for decorating watch-case backs and caps according to the same method.

A sheet of drawings accompanies this specification as part thereof.

Figure 1 of the drawings is an elevation, partly in section, of the face-plate and part of the tail-stock of a small engine-lathe, with attachments which convert the lathe into a machine for decorating watch-case centers according to this invention. Fig. 2 is a perspective view of the die-roll shown in Fig. 1. Fig. 3 is a perspective view of its pintle and housing. Fig. 4 is a perspective view of the die-holder. Fig. 5 is an end view of the work-holder, and Fig. 6 is a side view of the parts of the work-holder separated.

Like letters of reference indicate corresponding parts in the several figures.

Referring to the several figures, F^2 represents a small circular face-plate adapted to be substituted for the ordinary face-plate on the live-spindle of a given lathe. For example, T represents a fragment of the tail-stock of such lathe, and Z represents the outer end of its recessed "dead-spindle." Said face-plate

F^2 carries a guide-plate G^2 , having on its face a straight radial guide-rib g , a slide S^2 , working on said guide-rib, and a die-holder D^2 , (shown detached by Fig. 4,) which is pivoted at d in a slotted and perforated projection s^2 on the face of said slide S^2 and is fastened in its different positions by a clamp-bolt d^2 , extending through the perforated shank of the die-holder and through the concentric slots of said projection s^2 , as shown in Fig. 1. The die-holder has at its upper end a flat surface E at right angles to its stem, an adjoining surface E^2 at a different angle, and sockets e e^2 central and perpendicular to said surfaces, respectively.

The guide-plate G^2 is provided on its face at one end with a swivel projection g' . The corresponding end of the slide S^2 is provided with a screw-socket s' , and a flanged feed-screw S' is fitted to said swivel and socket and terminates at its end opposite the socket in an angular head h , so as to be operated by a wrench or key. A hand-wheel h^2 may be formed on or attached to the screw S' instead of said head h , and a counter-balance O may be attached to the face-plate F^2 diametrically opposite said guide-plate G^2 , as shown in dotted lines in Fig. 1, and other like modifications will suggest themselves to machinists. The office of said feed-screw S' is to draw or press the die-roll R^3 radially against the peripheral surface to be decorated on the center J^3 , and any suitable mechanical device operated by hand or otherwise may be employed for this purpose. The die-roll R^3 is a loose wheel of hardened steel having its periphery conformed to the cross-section of the center, as represented in Fig. 1, whatever the shape may be, and provided in reverse with the desired design, or, preferably, with an aliquot fraction of the design adapted to be repeated continuously. It is mounted by means of a pintle Q , Fig. 3, in a swivel-housing P^2 , which has a stem p^2 , Fig. 3, fitted to the socket e , Fig. 1, perpendicular to the end surface E of the die-holder D^2 . Said stem p^2 is fitted to said socket e rather snugly, but so that the housing may readily turn a little in adjusting the die-roll to the center. The center J^3 is held during the decorating operation by a work-holder W^2 , (shown detached by Figs. 5 and 6,) having a shank w , fitted to the axial socket of

the dead-spindle Z of the tail-stock T. The other parts of said work-holder are a circular form piece or hub w^7 , screwed upon the outer end of the shank, a flat circular cap w^8 , and an axial screw w^9 , the latter passing through central holes in said hub and cap into a screw-socket in the outer end of the shank w , as shown in Fig. 1, and serving to clamp the center J^3 between the perimeter of the cap w^8 and a stepped peripheral seat I^3 , the latter formed on the hub w^7 concentric with the spindle w and with the dead-spindle Z and fitted to the interior of the center. With the guide-plate G^2 in its lowermost position, as represented in Fig. 1, and the slide S^2 lowered thereon below the working position represented in said figure, the die-holder D^2 is turned, if need be, on its pivot d and fastened in vertical position by its clamp-bolt d^2 . The housing p^2 , provided with a suitable die-roll R^3 for the work in hand, is then adjusted upon said end surface E of the die-holder, so that the ends of the die-roll are parallel with the face-plate F^2 . The work-holder W^2 , having a watch-case center J^3 fastened therein, as above described, is now adjusted by means of the tail-screw of the tail-stock through the medium of the dead-spindle Z until the center J^3 is exactly above the die-roll R^3 . The die-roll is then elevated by means of the feed-screw S' , through the medium of the slide S^2 , die-holder D^2 , and housing P^2 until the periphery of the die-roll is pressed hard against that of the center. The live-spindle of the lathe is then actuated, as described in the specification forming part of my said application filed September 10, 1888, and through the medium of said parts F^2 , G^2 , S^2 , D^2 , P^2 , and Q the die-roll is caused to revolve back and forth in contact with the surface to be decorated until the design is raised or sunk to the required extent. Meanwhile at each reversal of the revolving motion, the guide-plate G^2 being then preferably in its lowermost position, as shown in Fig. 1, the feed-screw S' receives a part turn so as to again press the die-roll tightly against the work. When a center is finished, the die-roll is lowered by means of the feed-screw S' , a fresh center is substituted for the decorated one in the work-holder, and thus the work may proceed until any required number of centers of a given size and shape have been decorated by one and the same die-roll.

Die-rolls appropriate to each size and shape of center to be decorated will be employed, as also for different designs, and the hub w^7 of the work-holder W^2 must be changed for different sizes of centers. Otherwise all the parts of said holder W^2 , together with the die-holder D^2 , housing P^2 , and pintle Q, may be employed for decorating centers of any size and shape, and with a suitable spindle, substituted for said housing P^2 on said end surface E or inserted in the socket e^2 of the ad-

joining surface E^2 and provided with a suitable beveled or beveled and concave die-roll and with the die-holder D^2 properly adjusted and the hub and caps of the appropriate work-holder substituted for the hub-cap and screw of said work-holder W^2 , the same lathe attachments or a special machine embodying the same principles may be converted for decorating watch-case backs and caps according to the same method.

Die-rolls accurately proportioned circumferentially to the centers to be decorated may revolve continuously until the decoration is raised on the center or sunk therein to the required extent; but the described back-and-forth revolving motion is preferred for general use, and therewith slight inaccuracies in the proportions of the die-rolls are ordinarily immaterial.

Having thus described the present improvement, I claim as my invention and desire to patent under this specification—

1. The work-holder W^2 , composed of the stem w , the hub w^7 , having a stepped peripheral seat fitted to the interior of watch-case centers of a given size, the cap w^8 , and the axial clamp-screw w^9 , in combination with a non-rotary spindle having an axial socket to which said stem is fitted, a die-roll having its periphery provided with a given engraved design or an aliquot fraction of such design in reverse, and means for revolving said die-roll (continuously or back and forth) around and in contact with the center, substantially as hereinbefore set forth.

2. The combination of a work-holder adapted to support watch-case centers, a non-rotary support for said work-holder, a die-roll having its periphery provided with a given engraved design or an aliquot fraction of such design in reverse, means, comprising a radial slide, for revolving said die-roll around said work-holder, and a device revolving with said slide and applied thereto for pressing the die-roll radially against the peripheral surface to be decorated, substantially as hereinbefore specified.

3. The combination, with the rotary face-plate F^2 and non-rotary tail-spindle Z, of the slide S^2 , having the screw-socket s' and perforated and slotted projections s^2 , the feed-screw S' for moving and supporting said slide, the pivoted work-holder D^2 , having end surfaces E E^2 and sockets e e^2 , the clamping-bolt d^2 , and the work-holder stem w , the latter being fitted to the axial bore of said tail-spindle, whereby the machine is adapted to be converted by interchangeable parts for the decoration of watch-case centers or of watch-case backs or caps alternately substantially as hereinbefore set forth.

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Witnesses:

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