4 Sheets—Sheet 1.

(No Model.)

E. LEACH.

MACHINE FOR DECORATING WATCH CASES.

Patented Apr. 15, 1890.

No. 425,809.

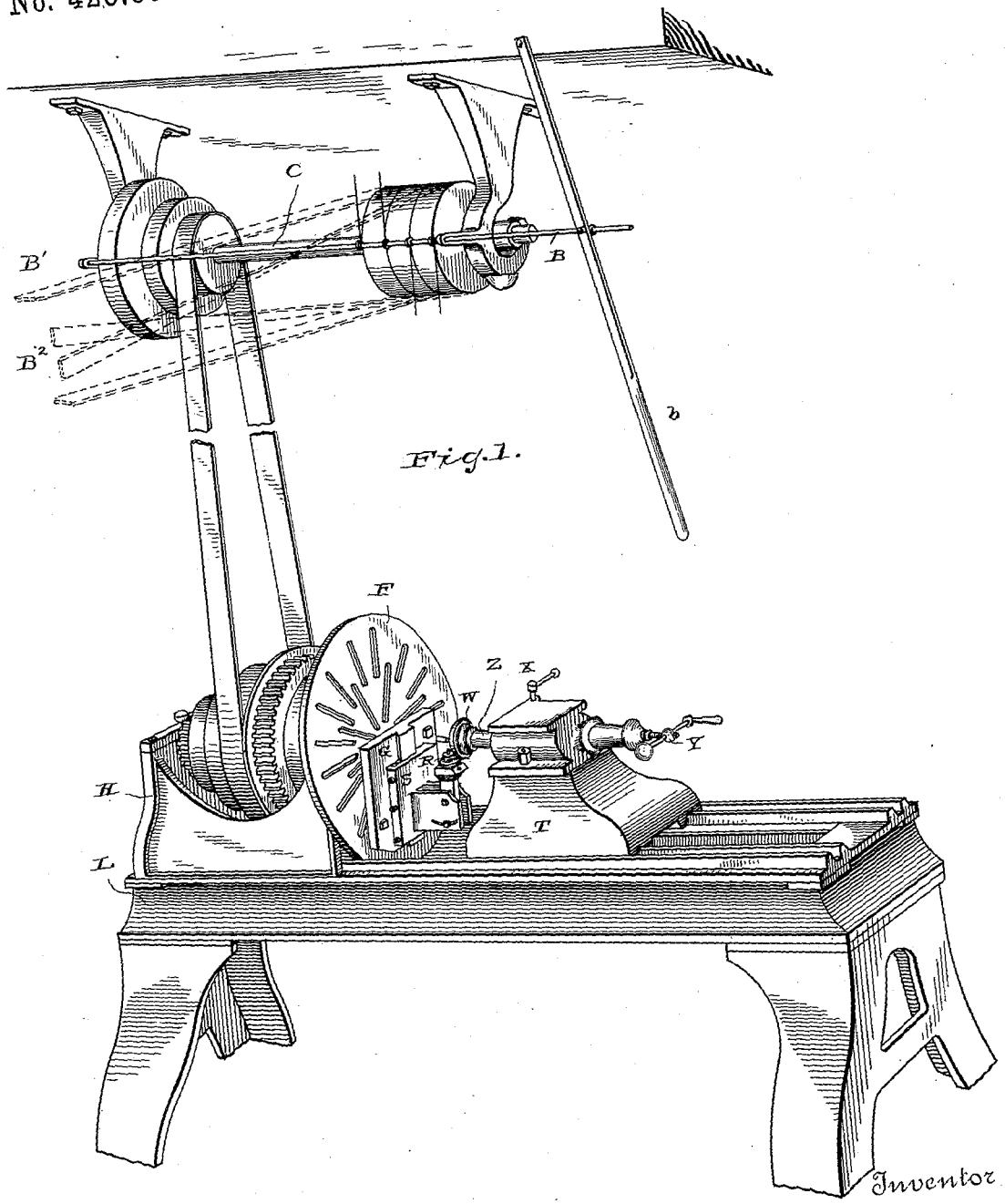

Fig. 1.

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(No Model.) 4 Sheets—Sheet 2.

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Fig. 2.

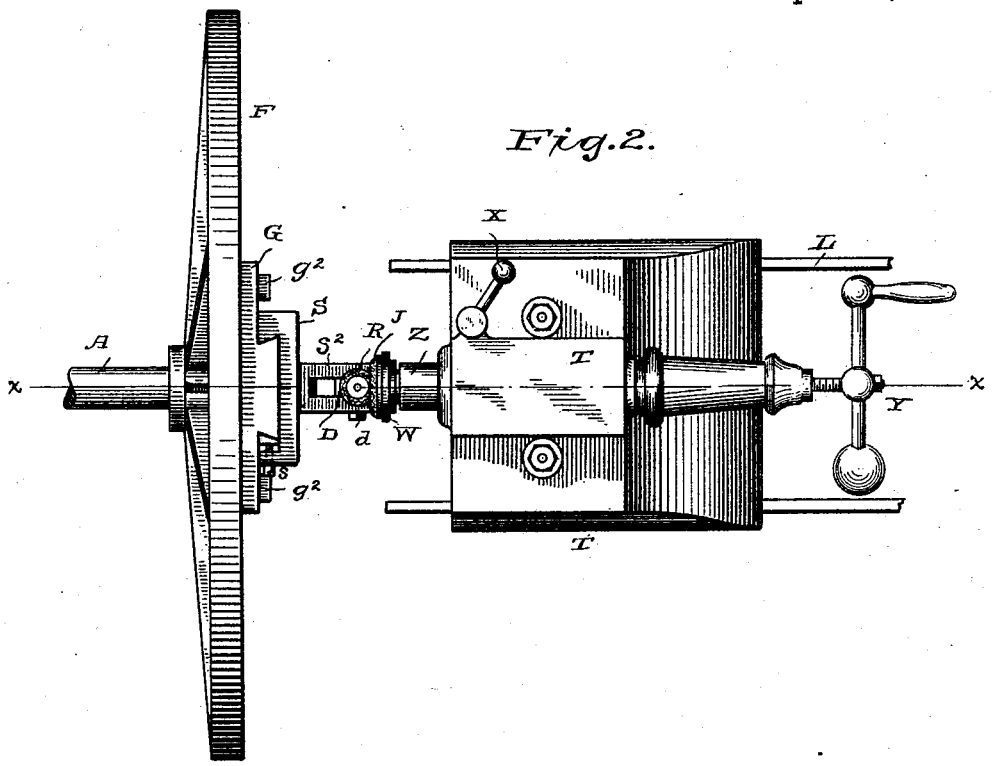

Fig. 3.

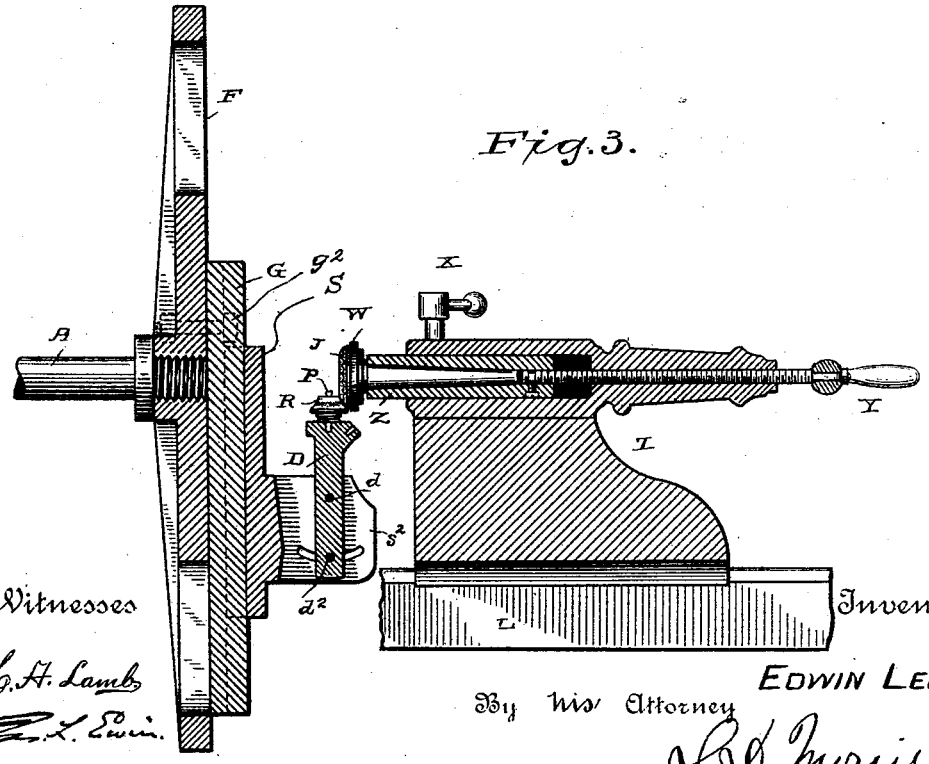

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Fig. 4.

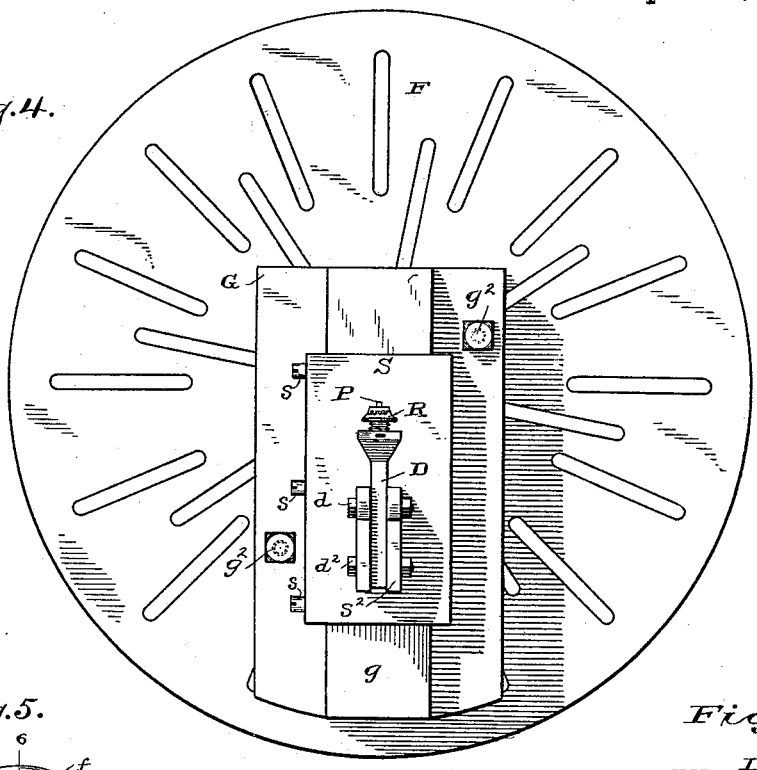


Fig. 5.

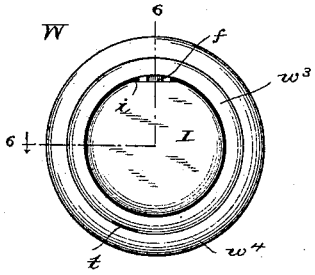


Fig. 6.

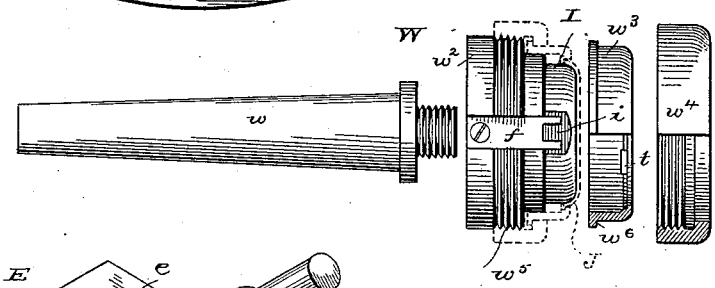
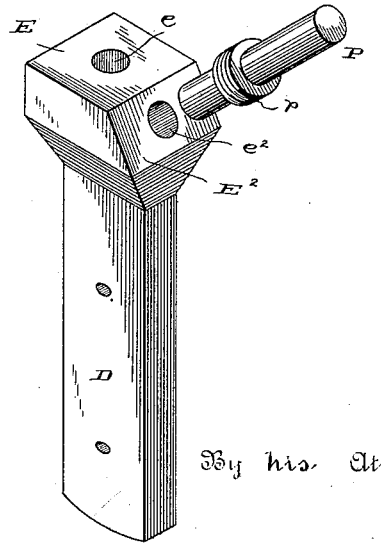


Fig. 7.



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(No Model.) 4 Sheets—Sheet 4.

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MACHINE FOR DECORATING WATCH CASES.

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Fig. 8.

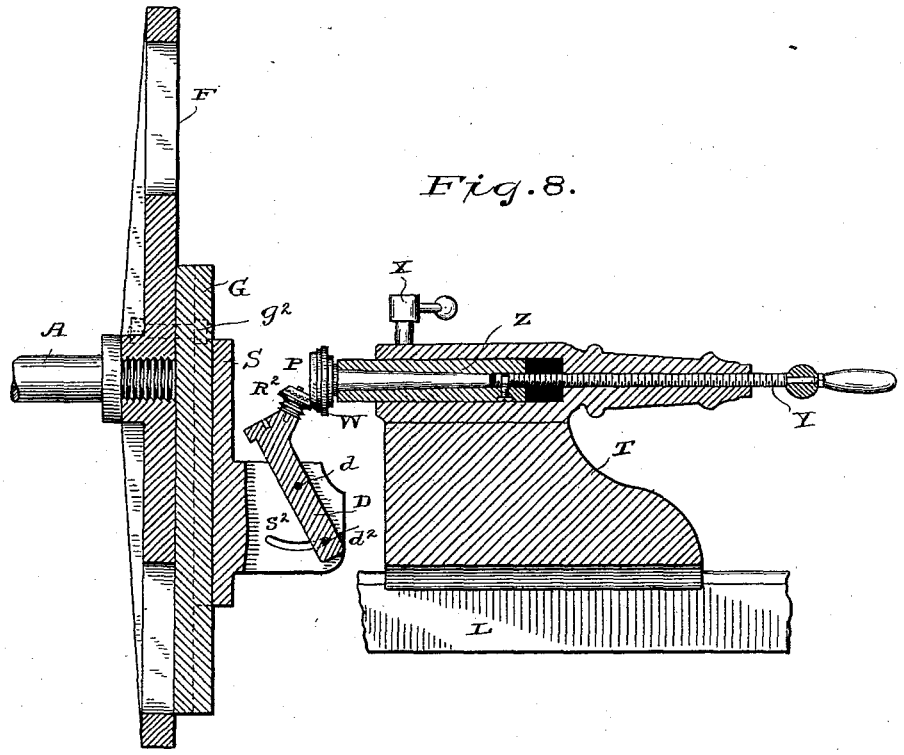


Fig. 9.

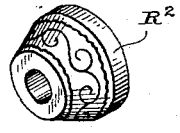
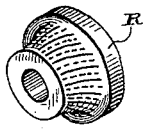


Fig. 10.



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UNITED STATES PATENT OFFICE.

EDWIN LEACH, OF BROOKLYN, NEW YORK.

MACHINE FOR DECORATING WATCH-CASES.

SPECIFICATION forming part of Letters Patent No. 425,809, dated April 15, 1890.

Application filed September 10, 1888. Serial No. 285,012. (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 Machinery for Decorating Watch-Cases, of which the following is a specification.

This invention is additional to my improvement in machines for decorating watch-cases set forth in a previous application for United States Letters Patent filed January 6, 1888, Serial No. 259,989, relating therewith to mechanical devices for decorating the backs, caps, and centers of watch-cases in imitation of hand-engraving according to my improvement in the art of decorating watch-cases set forth in a divisional application filed June 30, 1888, Serial No. 278,637.

The present invention consists in certain novel attachments to an ordinary engine-lathe and novel combinations of parts so formed, as hereinafter set forth and claimed.

Four sheets of drawings accompany this specification as part thereof.

Figure 1 of the drawings represents a small-scale perspective view of a small engine-lathe and its reversing counter-shaft with my attachments in working position. Fig. 2 represents a top view of the face-plate and tail-stock of the lathe, with their attachments, as shown in Fig. 1. Fig. 3 represents a section on the line $x\,x$, Fig. 2. Fig. 4 represents a face view of the face-plate, with its attachments. Fig. 5 represents an end view of the tail-stock attachment, and Fig. 6 a top view of its several parts separated and partly in section. Fig. 7 represents a perspective view of the die-holder and its spindle separated. Fig. 8 represents a view similar to Fig. 3, with the die-roll spindle in its alternative socket; and Figs. 9 and 10 represent perspective detached views of the respective die-rolls hereinafter described. Figs. 2, 3, 4, and 8 are drawn to a scale larger than Fig. 1, and Figs. 5, 6, 7, 9, and 10 to a still larger scale.

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

In carrying this invention into effect I employ a reversing counter-shaft C, with its belt-shifter B, and a machinist's lathe L, or so much thereof as is represented in Fig. 1, with its slotted face-plate F on the live-spindle A of the head-stock H, the tool-rest removed, and the tail-stock T adjusted to a position conveniently near the face of the face-plate. To the face-plate F a guide-plate G is tightly attached by bolts g^2, which pass through holes drilled therefor in the face-plate on the opposite sides of a line passing through the axis of the live-spindle, hereinafter termed the "axis of revolution," so that a straight guide-rib g on the face of said guide-plate is radial to said axis. Upon this guide-rib a slide S is fastened at the required distance from said axis by gib-screws s with a suitable gib, and the face of said slide is provided with a slotted and perforated projection s^2, in which a die-holder D is pivoted by a transverse bolt d and fastened at a necessary angle by a parallel bolt d^2, the latter accommodated in its different positions by arc-slots in the respective sides of said projection s^2. (Seen in Figs. 1, 3, and 8.) Said die-holder D (shown detached in Fig. 7) is constructed with a head enlargment having effective surfaces E E^2, Fig. 7, at different angles relative to the shank of the holder, and drilled sockets e e^2, perpendicular to said surfaces, respectively. A stud-pin P to form the die-roll spindle is tightly fitted to both of said sockets and is provided with a screw-threaded collar p, Fig. 7, upon which to screw a nut to facilitate removing and replacing the pin and to form and preserve a smooth step for the die-rolls R R^2, which are fitted to the spindle end of the pin, so as to rotate freely thereon.

The customary taper-bored dead-spindle Z of the tail-stock T, adjustable lengthwise by a crank-screw Y and fastened at will by an upright clamp-screw X, is provided with a work-holder W, having a tapering shank which is fitted to said bore. This work-holder (shown detached in Figs. 5 and 6) consists of four separable parts—namely, said shank w, Fig. 6, a form-piece or hub w^2, screwed upon the outer end of the shank, an annular inner cap w^3, and an annular outer cap w^4, the latter screwed upon an external screw-thread w^5, Fig. 6, on said hub w^2. The terminal form portion I of this hub is fitted to the interior or back of a given size and style of watch-case back or cap, and its periphery is

provided with a flat surface *i* to accommodate the attached hinge-plate. A fork *f*, fixedly attached to the hub, projects over said flat surface and embraces the projecting tube of the hinge, so as to preclude rotation of the back or cap. The inner cap w^3 has a recess *t*, Fig. 6, fitted to the thumb-lips of back backs. Front and back backs and caps of a given size and style fit a single holder, and the shank *w* may answer for all the work-holders that may be required. Watch-case centers require a different style of holder, forming no part of my present invention.

A watch-case back or cap is applied to the form I before or after the hub w^2 is screwed upon the spindle *w*, and the latter inserted in the dead-spindle Z of the tail-stock. The inner cap w^3 is then slipped into place, as determined by the location of said recess *t*, and the outer cap w^4 is screwed on, an interior shoulder of the latter bearing against a peripheral flange w^6 on the inner cap. The stud-pin P, forming the die-roll spindle, is inserted in one or the other of the sockets *e* e^2 in the die-holder D, according to the shape of the surface to be decorated, as illustrated by Figs. 3 and 8, and is provided with an appropriate die-roll, as R or R^2, having a peripheral face, which is either beveled, as illustrated by Fig. 9, or beveled and concaved, as illustrated by Fig. 10, according to whether the surface to be decorated is flat or flat beveled or is of the more common "oval" convexity, the die-roll being furthermore properly proportioned to the diameters of the surface. My method of making such die-rolls constitutes the subject of another invention set forth in a previous specification forming part of an application for United States Letters Patent filed July 10, 1888, Serial No. 279,505. The die-roll R or R^2 is now adjusted as to distance from the axis of revolution by moving the slide S and fastening it by its screws *s* and as to contact by turning the die-holder D on its pivot *d* and fastening it in position by means of said bolt d^2, the work-holder W being adjusted meanwhile by means of the tail-screw Y and held in position by tightening the clamp-screw X. Finally, the operator shifts one or the other of the driving-belts B' B^2, Fig. 1, upon the fast pulley of the counter-shaft C by moving the lever *b* of the belt-shifter, causing the live-spindle A and face-plate F to rotate and the die-roll R or R^2 to revolve around said axis of revolution. When a single revolution is completed, as when the die-roll again reaches the bottom of the work-holder W, the lever *b* is moved to the opposite extreme of its movement, bringing the other belt upon the fast pulley and instantly reversing the revolving movement. The die-roll is thus readily caused to revolve back and forth in contact with the surface to be decorated, and, being at all times free to rotate on its spindle, it transfers the design from its face to the work with uniformity and without in any way injuring the work, as more fully set forth in said previous specifications.

Details which have not been set forth may be of any approved description, and I do not limit my respective claims to mechanical details except as therein expressly stated.

I do not claim herein the invention of the method of ornamenting watch-case backs, centers, and other like articles by machinery, which consists in providing the periphery of a die-roll with the desired design, pressing it against the article to be ornamented, and then revolving said die-roll around the center of the surface to be decorated continuously or alternately first in one direction and then in the other, substantially as set forth, as the same is fully set forth in the specification forming part of my application for patent for improvement in the art of decorating watch-cases, filed June 30, 1888, Serial No. 278,637, and machinery for carrying the same into effect is set forth in my application filed January 6, 1888, Serial No. 259,989, to which my generic claims relative thereto are intended to be confined, my present specification relating to additional specific combinations, as hereinbefore set forth.

Having thus described my said improvement in machinery for decorating watch-cases, I claim as my invention and desire to patent under this specification—

1. The combination, with a reversing counter-shaft, of a lathe having its live-spindle provided with a face-plate and the latter provided with a guide-plate having a radial guide-rib, a superposed slide having a slotted and perforated projection, a die-holder pivoted in said projection and provided with a die-roll spindle, and an appropriate die-roll mounted on the latter so as to be free to rotate, and its dead-spindle provided with a work-holder which supports a watch-case back or cap in contact with said die-roll while the latter is revolved back and forth, substantially as hereinbefore specified.

2. In combination with a die-roll, as R or R^2, the die-holder D, having its head constructed with sockets *e* e^2 at different angles and provided with the stud-pin P, forming a die-roll spindle, substantially as hereinbefore set forth, for the purpose specified.

3. In machinery for decorating watch-case backs or caps, a work-holder having a form part or hub constructed with a flat peripheral surface to engage with the hinge-plates of finished backs or caps and with a fork to embrace their tubes, substantially as hereinbefore set forth.

4. The combination, in the work-holder W of the shank *w*, the form part or hub w^2, having the form I, flat surface *i*, and fork *f*, the recessed inner cap w^3, and the outer screw-cap w^4, substantially as hereinbefore set forth.

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FRED W. ROWE.