

(No Model.)

T. F. PROCTOR.

APPARATUS FOR APPLYING COLOR TO WATCH DIALS.

No. 260,783.

Patented July 11, 1882.

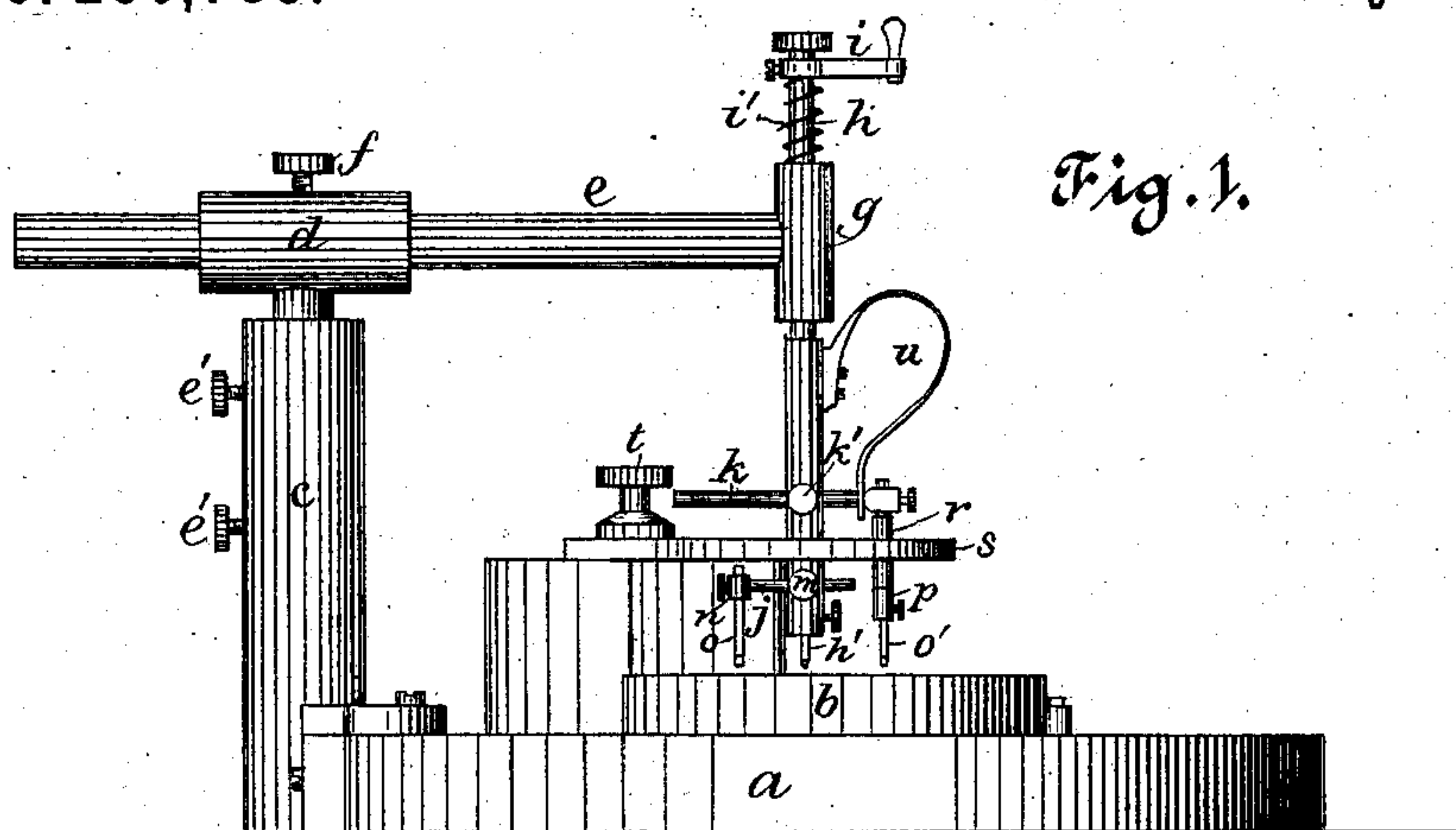


Fig. 1.

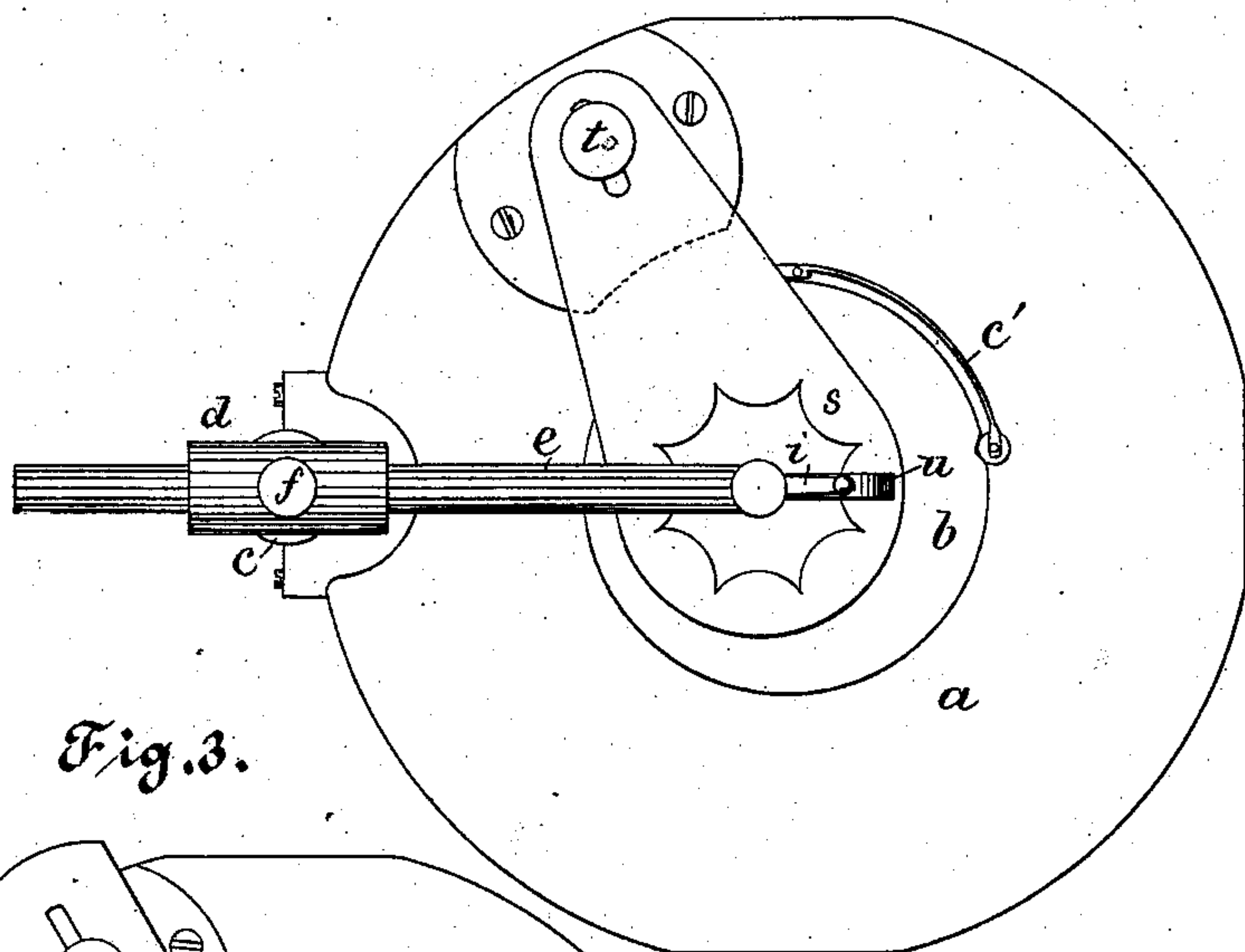


Fig. 2.

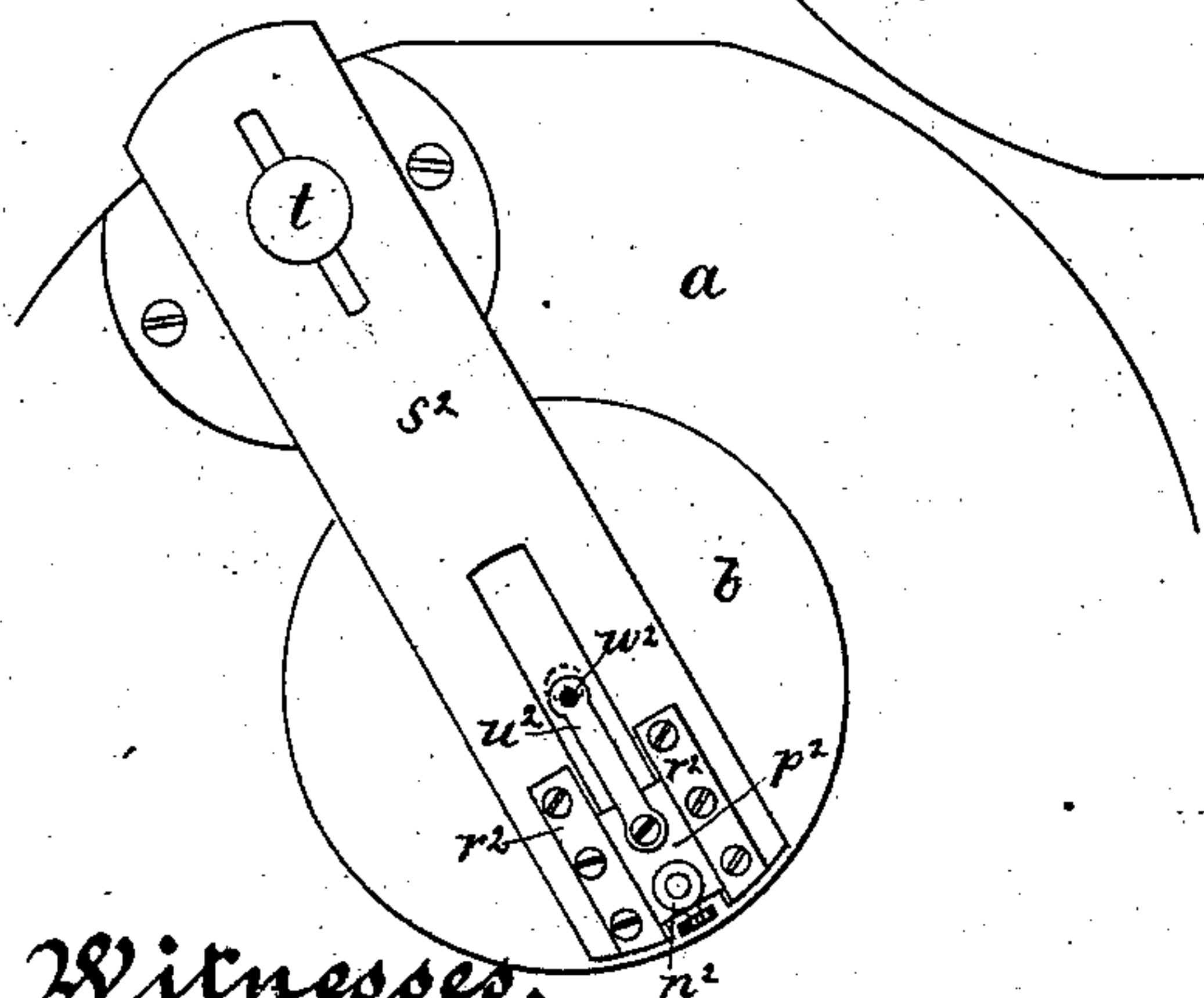


Fig. 3.

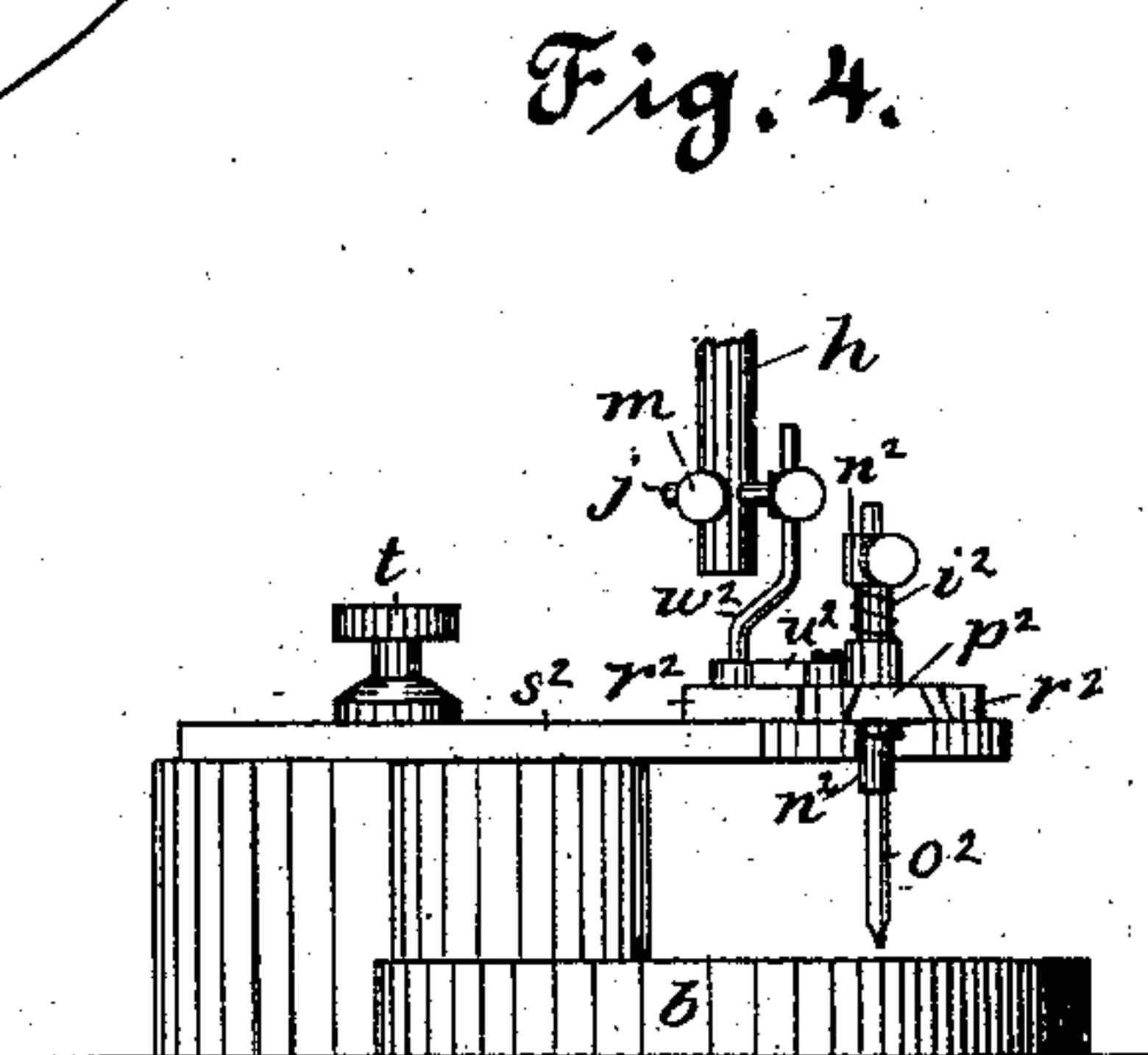


Fig. 4.

Witnesses.

Jos. P. Livermore  
Fred A. Powell.

Inventor.  
Thomas F. Proctor  
by Crosby Gregory  
Attys.

# UNITED STATES PATENT OFFICE.

THOMAS F. PROCTOR, OF WALTHAM, MASSACHUSETTS.

## APPARATUS FOR APPLYING COLOR TO WATCH-DIALS.

SPECIFICATION forming part of Letters Patent No. 260,783, dated July 11, 1882.

Application filed June 8, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS F. PROCTOR, of Waltham, county of Middlesex, State of Massachusetts, have invented an Improvement in Apparatus for Applying Color to Watch-Dials, of which the following description, in connection with the accompanying drawings, is a specification.

My invention relates to an apparatus for applying color to the dials of watches and similar articles.

Heretofore in applying the color or marks upon the dials of watches, as in making the figures thereon, the entire surface, where a considerable body of color is to be applied, is provided with the desired pigment or coloring-matter, a portion of which is afterward removed to leave only the desired portions of the dial colored. This operation of removing color, so as to give the colored portions the desired shape or appearance, has heretofore been done by hand, a suitable scraping-instrument being employed, which, in some instances, as in making the figures, is guided by a straight-edge, the position of which is controlled by the operator.

My invention has for its object to provide a machine for removing the color, so as to enable the said operation to be practiced with greater precision and with far greater rapidity, and consequently at much less expense than when done by hand, as heretofore practiced.

The invention consists essentially in the combination, with the usual bed-plate for holding the watch-dial, of a scraping-tool and means to guide it in certain definite relation to the said watch-dial, so that when moved by the hand of the operator or by other power it will remove the color from the surface of the dial in definite places, determined by the mechanical means employed for guiding the said tool.

As herein shown, a tool-actuating shaft adapted to be rotated by hand or other suitable power is mounted in a bracket adjustable with relation to the bed-plate and dial thereon, and the said shaft is provided with arms carrying scraping-tools by which the color may be removed as the said shaft is rotated. By placing the said shaft concentric with the

watch-dial, and having a scraping-tool rigidly connected with an arm thereon, the said scraping-tool will operate in a circle concentric with the dial, and by varying the position of the shaft and the length of the tool-carrying arm circular figures can be produced in any desired position on the dial. In some instances the tool-carrying arm is made movable in suitable guides transverse to the shaft, so that as it is rotated the tool may also have a movement radially toward and from the said shaft, the said radial movement being controlled by a pattern-surface, so that the tool may be caused to move in any desired path around the dial, producing scallops, sinuous curves, ovals, or other more or less irregular shapes, as may be desired. For making straight lines, as for the figures on the dial, the tool may be mounted in a carriage reciprocating in a suitable guide, the relative position of which and the dial may be varied as desired, the said carriage being reciprocated by a crank or eccentric or other suitable connection with the actuating-shaft to remove the color, as desired. In all these operations it will be seen that the tool is mechanically held and guided in a fixed predetermined path, and the certainty of the operation does not depend in any degree upon the steadiness of the hand or the trueness of the vision of the operator, and that consequently the work can be done with much greater rapidity and greater perfection in result than has heretofore been attained. The tool will preferably be made so that it can be removed from engagement with the dial while moving over it, if desired, it being herein shown as raised from the surface of the dial by a spring and pressed down thereon by the hand of the operator, so that the pressure of the tool on the surface remains under control of the operator.

Figure 1 is a side elevation of an apparatus for coloring or decorating dials in accordance with this invention, it being arranged to make circles and irregular curves. Fig. 2 is a plan view thereof; and Figs. 3 and 4, a plan view and side elevation, respectively, of the apparatus when arranged to make straight lines.

The bed-plate *a* and block or chuck *b* to re-



ceive and hold the dial or other article while being operated upon, and the spring  $c'$  to retain the said block  $b$  in any desired angular position, so as to space off any desired arc on the dial, may be substantially such as commonly employed for this purpose when the dial is to be operated upon by hand. The said bed-plate  $a$  is provided with a standard,  $c$ , to receive a bracket,  $d$ , which may be adjusted both vertically and angularly in the said standard  $c$  and retained in adjusted position by set-screws  $e'$ . The said bracket  $d$  sustains an arm,  $e$ , adjustable therein and held in any desired position by the set-screw  $f$ , the said arm being provided with a bearing,  $g$ , for the tool-actuating shaft  $h$ , provided with a handle,  $i$ , or pulley, or other means for imparting a rotary movement thereto. The said shaft is free to move longitudinally in the said bearing, and is acted upon by a spring,  $i'$ , which tends to keep the said shaft elevated in its bearing and to lift the tools carried by it from the face of the dial, the said shaft being pressed downward by the operator when desired to have the said tools act upon the dial.

The shaft  $h$  is shown in Fig. 1 as provided with one or more arms,  $j$   $k$ , the former being adjustably connected therewith by the set-screw  $m$  and the latter being free to move transversely to the said shaft through a suitable passage or guide therein.

The arm  $j$  is provided with a socket,  $n$ , to receive a scraping-tool,  $o$ , which, as the shaft  $h$  is rotated by the handle  $i$ , will describe a circle of greater or less diameter, according to the position of the arm  $j$  in the shaft  $h$ .

The arm  $k$  is provided with a tool-socket,  $p$ , adapted to receive a similar scraping-tool,  $o'$ , the shank of the said tool being provided with a roller,  $r$ , which, by engaging with a pattern-surface,  $s$ , connected with the bed-plate by a set-screw,  $t$ , will guide the tool carried by it in a path corresponding with the said pattern-surface, the said roller being pressed against the pattern-surface by the spring  $u$ . By removing one pattern-surface and replacing it by another it will be seen that the tool  $o'$ , carried by the arm  $k$ , can be made to describe any desired path around the dial, and by fixing the said arm  $k$  by means of the set-screw  $k'$  the said tool may be made to describe circles similar to the one described by the tool  $o$ , carried by the arm  $j$ , and that by employing both tools circles and other curves can be made simultaneously, the said circles and curves being concentric with the dial or otherwise, according to the position in which the shaft  $h$  is set by adjusting its arm  $e$  and bracket  $d$ . The set-screw  $k'$  will of course be loosened when the arm  $k$  is used in connection with the pattern-surface.

The shaft  $h$  is provided with a pointer,  $h'$ , to enable it to be centered over any desired point.

When desired to describe straight lines the

tool  $o'$ , Figs. 3 and 4, is mounted in a tool-socket,  $n^2$ , mounted upon a carriage,  $p^2$ , made to reciprocate in guides  $r^2$  upon the guide-plate  $s^2$ , that may be fixed in any desired position relative to the dial and bed-plate by means of the set-screw. The said carriage  $p^2$  is connected by a link,  $w^2$ , with a suitable eccentric or crank-pin,  $w^2$ , actuated by the shaft  $h$ , so that as said shaft is rotated the carriage  $p^2$  and tool carried by it are reciprocated in a straight path, the length of which is determined by the eccentricity of the crank or eccentric  $w^2$ , which is shown as a wire carried by the adjustable arm  $j$ , the said wire being bent, as shown, to enable it to be brought nearer the center of the shaft.

The tool-socket  $n^2$  is made longitudinally movable in the carriage  $p^2$ , and is normally pressed upward by the spring  $i^2$ , so that the tool does not act except when pressed down by the operator, when its pressure on the surface being scraped will be regulated by the sense of feeling of the operator, as heretofore, although its movement will not be guided by hand nor dependent on the hand and eye of the operator for its accuracy.

It is obvious that the operation would be the same if the shaft  $h$  were held stationary and the dial and pattern-surface revolved together upon the block  $b$ , to which the said pattern-surface would be fixed, and in some particular instances this construction may be preferred.

In the present apparatus all the parts are shown as adjustable, the single machine being adapted to do several kinds of work; but in large factories, where numerous dials are to be made as nearly alike as possible, different machines will be used for different sizes and for different portions of the work, each being constructed or permanently adjusted for only the especial work it has to perform.

I claim—

1. In a machine for coloring watch-dials and similar articles, the combination of the following elements, namely: a bed-plate to sustain the article being operated upon, and mechanism to hold a color or pigment scraping tool and guide it in a definite path over the said article, substantially as described.

2. The bed-plate, standard, and tool-actuating shaft mounted thereon, combined with the scraping-tool connected with the said shaft, as and for the purpose described.

3. The bed-plate and tool-carrying shaft movable toward and from the said bed-plate, combined with the spring by which the said shaft is normally retained in the position most remote from the said bed-plate, substantially as described.

4. The bed-plate, tool-actuating shaft, and tool-carrying arm movable radially relative to the said shaft, combined with the pattern-surface by which the said radial movement is governed, substantially as described.

- 5 5. The combination of the bed-plate and scraping-tool and mechanism to move it in a definite path over the said bed-plate, the said tool being also movable toward and from the surface being acted upon, whereby its pressure on the said surface is governed by the operator, substantially as described.
- 10 6. The combination of the bed-plate, reciprocating tool-carriage, and actuating-shaft therefor, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS F. PROCTOR.

Witnesses:

JOS. P. LIVERMORE,  
BERNICE J. NOYES.