2. Sheets. Sheet. 1.

# W. M. Davis,

## Ornamenting Mirrors.

No. 111,731. Patented Feb. 14. 1871.

Fig. 1,

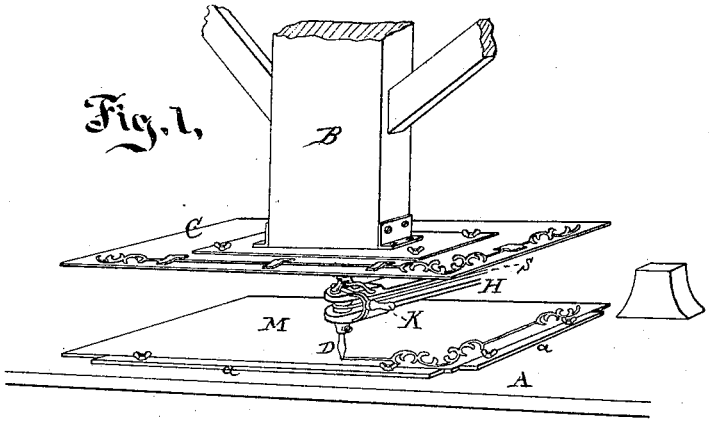



Fig. 2,

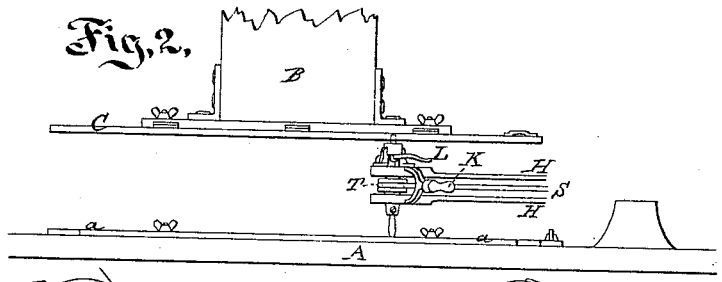



Fig. 3,

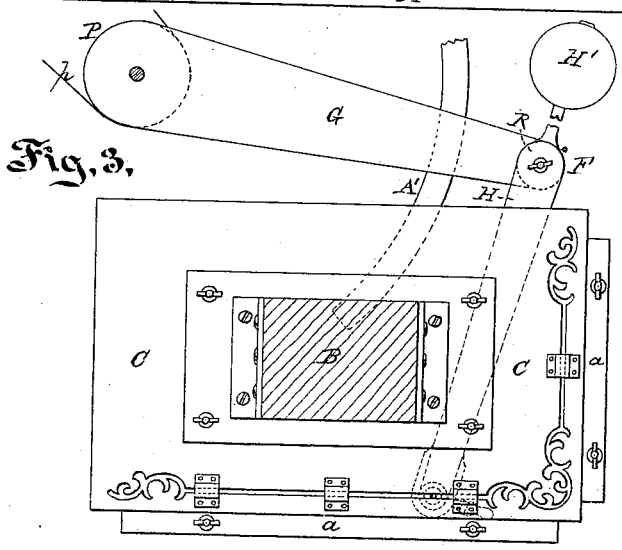
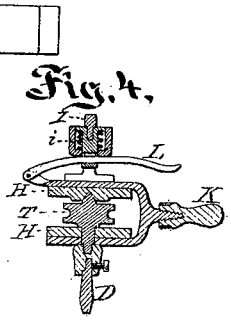



Fig. 4,




Witnesses,

A. Hoermann

Inventor,

Wm. M. Davis

by his attorney F. L. Stetson

2 Sheets, Sheet 2.

# W. M. Davis,

## Ornamenting Mirrors.

NO. 111,731. Patented Feb. 14, 1871.

Fig. 5,

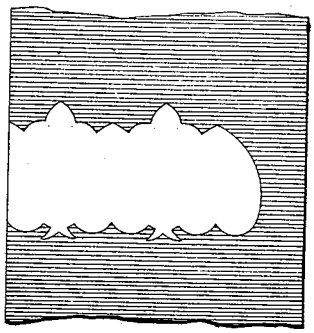


Fig. 8,

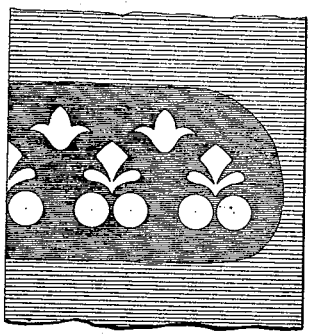


Fig. 11,

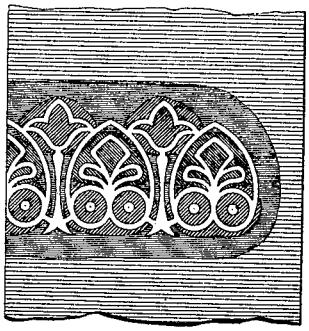


Fig. 6,

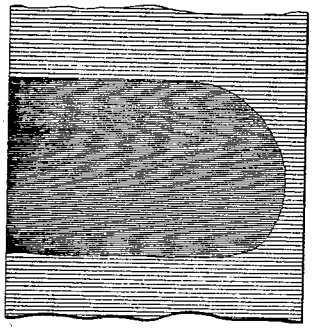


Fig. 9,

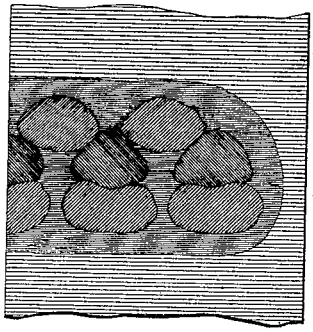


Fig. 12,

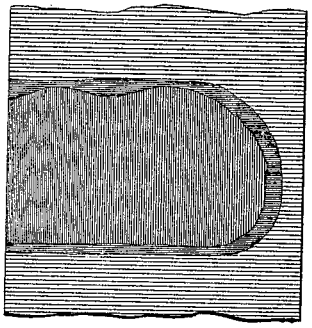


Fig. 7,

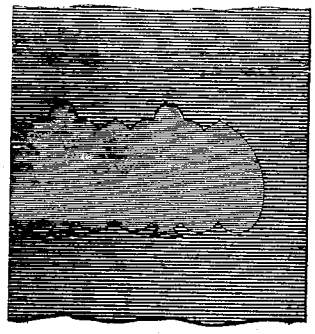


Fig. 10,

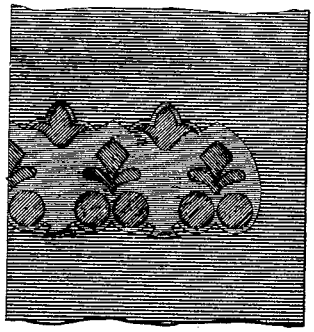
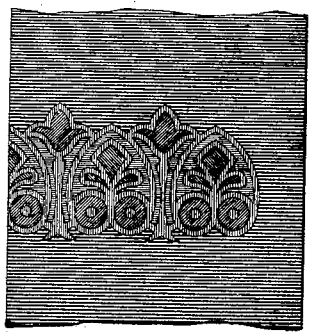


Fig. 13,



Witnesses,

A. Hoermann

Inventor,

Wm. M. Davis

by his Attorneys, D. D. Watson

# UNITED STATES PATENT OFFICE.

WILLIAM M. DAVIS, OF MOUNT SINAI, ASSIGNOR TO HIMSELF AND S. S. NORTON, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN ORNAMENTING MIRRORS.

Specification forming part of Letters Patent No. **111,731**, dated February 14, 1871.

*To all whom it may concern:*

Be it known that I, WILLIAM M. DAVIS, of Mount Sinai, in the county of Suffolk, in the State of New York, have invented a certain new and Improved Method of Figuring and Ornamenting Looking-Glasses; and I do hereby declare that the following is a full and exact description thereof.

My invention applies to the exhibition of pictorial designs, scrolls, and ornamental decorations in one or more colors, as also to plain and ornamental lettering suitable for advertising and analogous purposes. It can be used with economy and success wherever large numbers are required to be alike.

It has long been common to advertise looking-glasses and their frames by exhibiting in ferry-boats, hotels, and the like specimens of the goods with the name and address of the manufacturer produced thereon by painting in reverse on the back after having removed a portion of the silvering of the shape of an ellipse or other figure at the top or other part of the mirror. This process is by the usual method of painting and gilding on glass. After the letters are formed the whole space is backed up by some plain color, which forms a field or ground for the letters.

My improvement employs the mirrored surface itself as the field or background. I can ornament or figure on the margin, or can cover the entire surface with slenderly-formed letters or other devices, so as to make the whole surface available for advertising without entirely destroying, or in fact very largely impairing, its use as a mirror. The lettering or other ornamentation appears to stand suspended in mid-air, and a very slight movement of the eye suffices to make clearly apparent all parts of the face or other object which it is desired to view in the mirror.

I will proceed to describe what I consider the best means of carrying out my invention.

The accompanying drawing forms a part of this specification.

Figure 1 is a perspective view, showing the glass and some of the operating parts. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view, and Fig. 4 is a vertical section on a larger scale.

The remaining figures represent the work in various stages of progress.

Fig. 5 shows the silvering removed from back; Fig. 6, the size or color applied on back; Fig. 7, the view now presented on the face; Fig. 8, a portion of the color removed by a repetition, with a different guiding plate or templet, of the means which removed the silvering, back view; Fig. 9, further color applied to the back; Fig. 10, the face view presented at this period; Fig. 11, color further removed, back view; Fig. 12, the entire surface bronzed; and Fig. 13, the finished face view.

Similar letters of reference indicate like parts in all the figures.

It is not necessary to manufacture the glass or to coat it with reference to my invention. There are two common methods of silvering glass, the one by the use of mercury and tin, and the other by the use of nitrate of silver, while the varieties of glass, both in perfection of material and planeness of surface, may be said to be infinite. I can use any of these, purchasing in the market from time to time as may be required.

Referring to the figures, M is the plate of glass to be figured. It is laid with its silvered side uppermost on a table, A, and is firmly held down by suction induced by a pump or the like; or it may be held down merely by its own gravity, aided by strips or cleats *a*, which are adjustable to fit against two or more of its edges. It is only essential that it be held sufficiently firm to avoid movement by any slight concussion or jar to which the table may be accidentally subjected.

B is a stout post, extending down from the ceiling of the room, or from a large frame-work, (not represented,) so as to be very rigid relatively to the table below, and to leave a clear space for the operation of the mechanism now to be described. The under surface of the post B is adapted to hold, by the aid of countersunk screws or other convenient means, a broad plate, C, of hard dense wood or other suitable material, which has grooves on its under face corresponding exactly to the figures to be produced on the glass.

Taking care that the plate C is exactly parallel to the upper surface of the table A, and consequently to the silvered surface of the

glass to be figured, I proceed to subject the exposed surface of the glass to the action of a rapidly-revolving scraper, which, being guided by the grooves in the lower surface of the plate C, removes the silvering over portions of the glass exactly corresponding to the grooves in the plate C.

Although I have termed these guiding-channels "grooves," it is obvious that they may be cut quite through by means of a scroll-saw or analogous device skillfully manipulated, taking care to bridge across to support the places which would thus be entirely cut out, like the center of the letter **O**, by means of suitable pieces glued on or otherwise fixed upon the back; or the figures may be produced by the scroll-saw on a thin hard-wood surface, and the whole may be backed by a continuous layer of similar or other material glued firmly thereon. In case the material is wood, the wood of the front piece may have its grain run at right angles to the wood of the back piece. It is sufficient that the grooves are deep and clearly defined, and so skillfully formed as to present exactly the proper contour according to which the glass is to be figured.

The revolving scraper is represented by D, and is mounted in a frame-work, G H, having an elbow-joint at F, and is driven by belting from a pulley mounted on a rapidly-revolving upright shaft, which forms the fixed center for the movements of the frame-work G H. Motion being imparted to this pulley P by means of a belt, *p*, by the aid of a treadle or other means not represented, a belt communicates the motion to a pulley, R, on an upright shaft, which forms the pivot of the joint F. The same or another pulley on the same shaft communicates motion by means of the belt S to the pulley T on the arbor which carries the revolving scraper D.

The frame allows the revolving scraper to be moved with freedom in all directions horizontally, so as to act on any desired portion of the glass; and the belts and pulleys maintain the constant operation of the scraper D in all positions, as will be readily understood. A smooth pin, I, which should be of a diameter exactly equal to that of the cutting face or end of the scraper D, is mounted in line with the latter, so as to extend up directly over it. Its upper end is smoothly rounded, and adapted to enter and be traversed along in the several grooves or channels, above described, in the lower surface of the plate C.

The operator introduces the pin I in a channel and moves it along from one end thereof to the other. If the channel is wide at any point or at all points, he presses it first to one side to produce the outline of one side of the channel, and then to the other side to produce the outline of the other side of the channel or figure; and if the channel or figure is very wide, he makes two or more traverses over the intermediate space, so as to remove the material there, if desired.

In some varieties of ornamenting and decoration the channel may be continuous, with or without various branches over the whole surface to be decorated. This is much easier to execute according to my invention.

To execute other varieties, as separate letters or scrolls entirely disconnected from each other, I provide a means of contracting the height of the parts and of readily increasing it again, meanwhile supporting the gravity of the parts, so that the silvered surface shall not be touched by the revolving scraper in changing the pin I from one groove or figure to another.

I support the arm G by means of a smoothly-surfaced rest, A′, which may be swung over any portion of the glass, as represented, when necessary to move the frame to that extent, and I support the weight of the portion H and its attachments by counterbalancing it by the weight H′. In other words, I make the joint F serve as a fulcrum to support the revolving scraper D and its attachments by the superior gravity of the counterbalance H′.

K is a handle, by which the revolving scraper D and its connections are moved. It must be pressed down by the hand when it is to act. The pin I is pressed upward by the very delicate spring *i*, which is coiled in a chamber below, as indicated in Fig. 4. The tension of this spring urges the pin I upward with sufficient force to overcome its gravity and lift it into the several grooves or recesses in the plate C; but it may be overcome by the superior gravity of the weight H′, or by the action of the thumb-lever L, when desired. This thumb-lever L may be pressed upward by another spring (not represented) with any degree of force desired. When the mechanism is tracing a pattern the thumb rests lightly on this lever, and the pin I, being held up by its spring *i*, traverses along in the groove, controlled by the attendant. When the removal of the silvered surface of a letter or figure has been thus completed the thumb-lever L is depressed, and, the pin I being thus drawn downward, the handle K is gently lifted, instead of being depressed, as before, and it is moved into the proper position for the next figure. There the thumb-lever L is liberated, and the pin I instantly rises into the proper groove. Here the operation before described is repeated until its figure is traced and a portion of the silvering exactly corresponding is removed from the glass below. This operation is repeated as many times as the pattern requires.

In making plain letters or figures the bronze or color for the letters or figures may be applied directly to the back, so as to cover the entire surface of the glass which has been left exposed by the removal of the silvering. It is necessary, however, in this operation to avoid applying any matter which shall act chemically to the injury of the adjacent silvering.

In treating on nitrate of silver, bronze or gold-leaf may be applied in the ordinary manner, laid broadly on the back—that is, the

back may be wet over with a soft brush and the gilding may be applied thereon, allowing both to overlap to any extent desired on the silvering. But in case a rich variety of coloring is required, I can repeat the operations above described with different patterns and different diameters of scrapers to remove a portion of the gilding, painting, or other matters with which the figures have been coated, and then apply a different color or a different bronze.

The details of this portion of the process may be varied indefinitely, according to the taste or skill of the operator.

Colors, bronzes, &c, may be applied by hand or by machinery so as to cover only a portion of the exposed surface first; and after having allowed that to dry, the remaining surface may be covered with another color or bronze.

In all these operations care must, of course, be taken to allow proper time and other conditions to properly harden the several pigments, oils, &c., employed.

The glass may be bit over the whole or a portion of its surface with fluoric acid, or the glass may be ground or engraved by the ordinary or any suitable means over the whole or a portion of its surface.

My invention also applies to the exhibition of lithographic designs for pictorial subjects, as flowers, figures, &c.

After having the design cut in the guiding-plate C, I make a complete drawing of a corresponding size on stone, from which I take impressions on suitable paper, which I then transfer to the glass. When sufficiently dry I back them up with the desired colors, or, if chromo-lithographs, I transfer them to the glass, remove the paper, and apply a suitable varnish or pigment for their protection.

A great variety of modifications of the details will readily suggest itself to any good mechanic or decorator, and may be employed at will.

It is only important to the success of my invention that the silvering be scrupulously preserved to form a background for the figuring and that the figures be faithfully executed according to a pattern previously prepared with skill and taste.

I propose to employ the very highest skill in the preparation of the plates or patterns C, and to employ children or other cheap labor in the manipulation of the details of the process.

I claim—

The method herein described of ornamenting and figuring looking-glasses—that is to say, removing portions of the silvering by a revolving scraper guided by templets or patterns, substantially as and for the purposes herein set forth.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

WM. M. DAVIS.

Witnesses:
WM. C. DEY,
R. ROULSTON.