

No. 732,836.

PATENTED JULY 7, 1903..

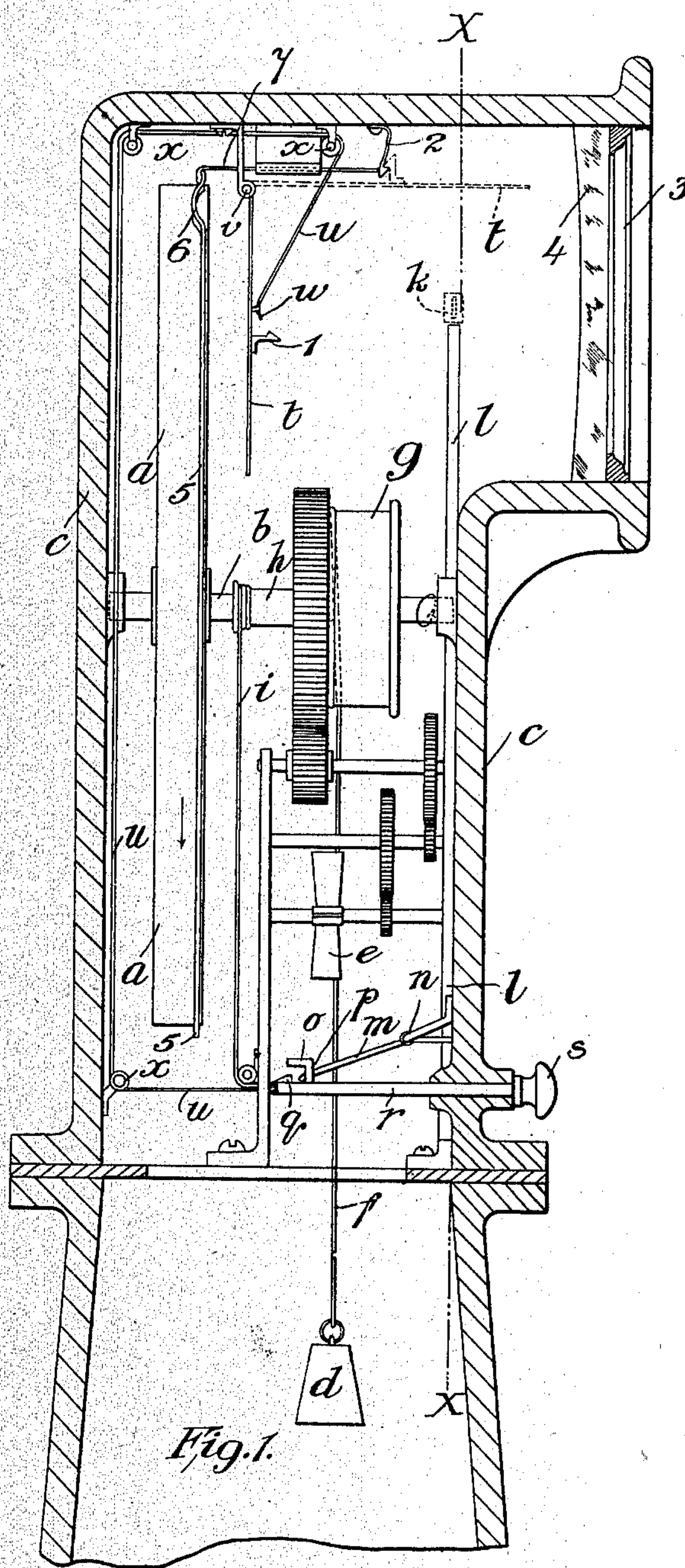
W. K.-L. DICKSON.

# APPARATUS FOR EXHIBITING REFLECTED IMAGES.

APPLICATION FILED MAR. 7, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Attest:

C. Middleton

Edward Lorton

Inventor  
William Kennedy-Laurie Dickson

To Mr. Spear Company  
Atty's



No. 732,836.

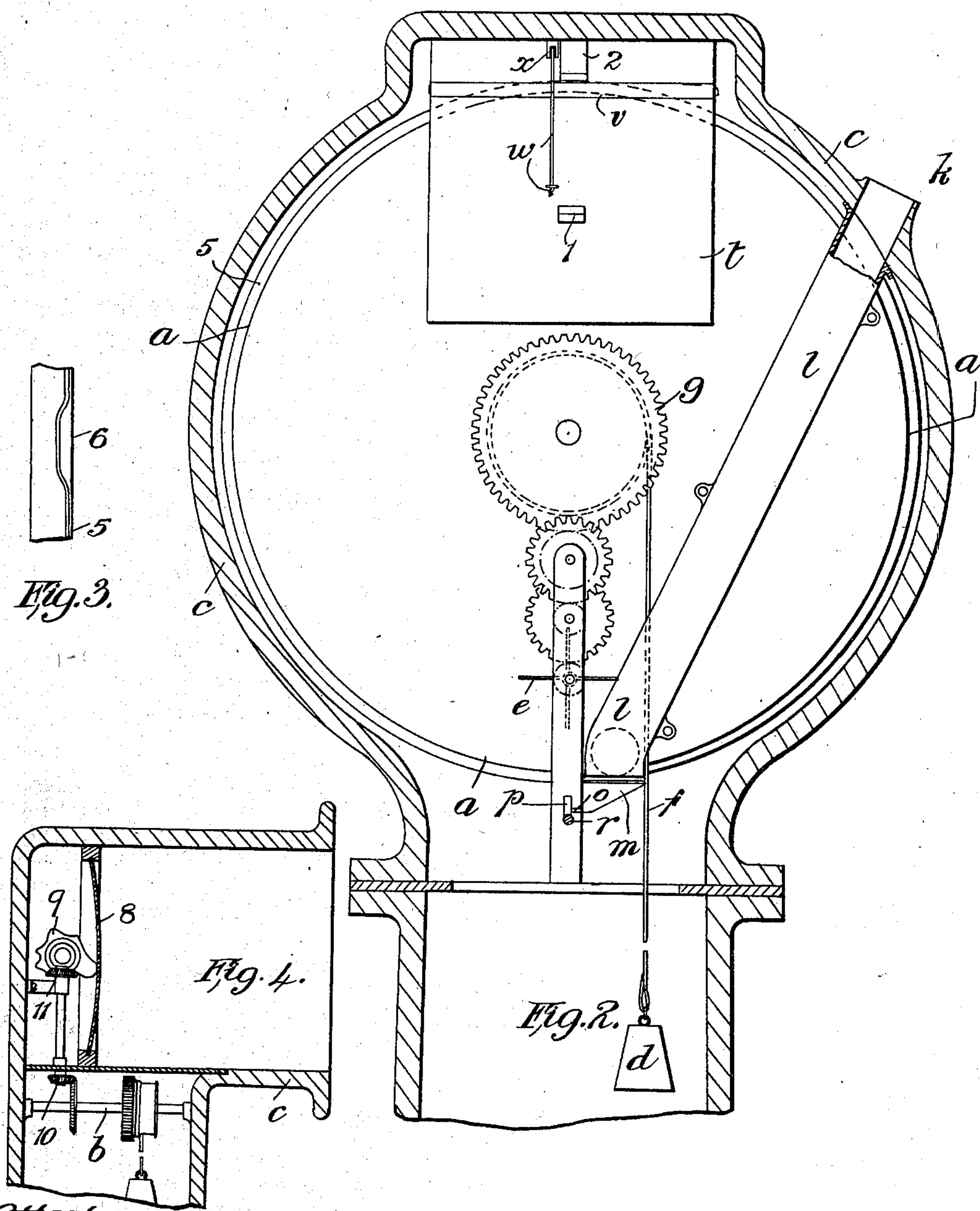
PATENTED JULY 7, 1903.

W. K.-L. DICKSON.  
APPARATUS FOR EXHIBITING REFLECTED IMAGES.

APPLICATION FILED MAR. 7, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



Attest:  
J. M. Manton  
Edward Sartor

Inventor.  
William Kennedy-Laurie Dickson.

By Ellis Spear Company  
attys.



# UNITED STATES PATENT OFFICE.

WILLIAM KENNEDY-LAURIE DICKSON, OF LONDON, ENGLAND.

## APPARATUS FOR EXHIBITING REFLECTED IMAGES.

SPECIFICATION forming part of Letters Patent No. 732,836, dated July 7, 1903.

Application filed March 7, 1903. Serial No. 146,681. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM KENNEDY-LAURIE DICKSON, a subject of the King of Great Britain and Ireland, residing at 64 Strand, London, W. C., England, have invented a certain new and useful Improved Apparatus for Exhibiting Reflected Images, (for which I have made application for Letters Patent in Great Britain, No. 11,876, dated the 24th day of May, 1902,) of which the following is a specification.

My invention relates to a new apparatus for exhibiting reflected images—such, for example, as the reflected image of an individual in a mirror—and has for its object to produce practically continuous changes in the appearance of the image observed. I find that very amusing results can be obtained by the use of this apparatus.

The invention consists in an apparatus for producing practically continuous changes of an observed image either by means of moving distorting-lenses or rotating cylindrical lenses or reflecting-surfaces of varied curvature or by means of fixed or moving reflectors of varying curvature.

Referring to the accompanying drawings, Figure 1 is a sectional side elevation of the apparatus. Fig. 2 is a sectional elevation of the same. Fig. 3 shows a detail, and Fig. 4 is a sectional side elevation of a portion of a modified form of the apparatus.

In the form of the apparatus shown in Figs. 1, 2, and 3 a disk *a* is carried by a horizontal axis *b*, mounted in a casing *c*. The disk *a* is provided with a reflecting-surface and is mounted in a casing at a suitable height for the operator to observe his image therein. The disk is adapted to be rotated by a weight *d*, the motion being controlled by a train of clockwork carrying a governor-fly *e*. The cord *f*, to which the weight *d* is attached, passes over and is fixed to a drum *g* on the axis *b*, which also carries another drum *h*, to which is attached the cord *i*, which serves to wind up the weight when the machine is to be operated.

In order to operate the machine, a coin is inserted in the slot *k*, passes down the chute *l*, and falls onto one end of the lever *m*, pivoted at *n*. The end *o* of this lever is formed as a transverse pin, which lies between the

projections *p* and *q* on the operating-bar *r*. Previous to the insertion of the coin the lever *m*, by means of its pin *o* and the projection *q*, prevents the pulling out of the bar *r* by means of the handle *s*. However, when the coin falls onto the one end of the lever *m* the other end *o* is raised clear of the projection *q* and comes into contact with the under side of the hooked projection *p*, which prevents *o* from rising any farther. The bar *r* is then drawn out by means of the handle *s*, and when it has moved a short distance the pin *o* clears the projection *p* and tilts up, allowing the coin to fall, when the lever *m* resumes its normal position. The further withdrawal of the bar *r* winds up the weight *d* by means of the cord *i*, which is attached to *r*, and at the same time raises a shutter *t* by means of the cord *u*. This shutter *t* is hinged at *v*, and the cord *u* is attached to it at *w* after passing over pulleys *x*. The diameter of the drum *h* and the position of *w* are such that when *r* is drawn out to its full extent the disk *a* is wound up to make one complete revolution, and the shutter *t* is drawn up and retained in a horizontal position by means of the catches 1 and 2. When the handle *s* is released, the weight *d* begins to descend, driving the disk *a* and the clockwork, the speed being controlled by the fly *e*. The reflecting-surface of the disk *a* is uneven, thus producing distorted images of the operator, the upper part of the disk being observed through the window 3, which is preferably fitted with a slightly-concave reducing-lens 4, which renders possible the use of a comparatively-small reflecting-disk *a*. The disk *a* is provided with a rim or flange 5, which at one part 6 (see Figs. 1 and 3) is curved. When the disk has made a complete revolution, the curved part 6 of the flange 5 moves the rod 7 to the left. The rod 7 is fixed to the spring-catch 2, which is thereby drawn back and the shutter *t* released. The projection *q* on the bar *r* is wedge-shaped or inclined at one side, so that when the bar is pushed or drawn in the pin *o* passes *q* and then falls between *p* and *q*, locking the bar until a coin is again inserted.

In another form of the invention, as shown in Fig. 4, the mirror 8 consists of a very thin sheet of glass or other suitable material, such



as metal, and the curvature of this is caused to vary by the rotation behind and in contact with it of an irregular cam 9. The same clockwork and coin-freed mechanism may be used 5 as shown in Figs. 1 and 2 and the cam 9 driven therefrom in any convenient way. As shown in Fig. 4, the cam 9 is driven from the shaft *b* through bevel-wheels 10 and 11. Instead of mounting the distorting-mirror on 10 a disk it may be mounted on a drum or cylinder or in a manner similar to that used in the "zoetrope."

Having now described my invention, what I claim as new, and desire to secure by Letters 15 Patent, is—

1. An apparatus for producing a distorted reflected image, comprising a mirror and automatic means for causing the curvature of the part of the mirror in which the image is 20 formed to pass through a series of changes, whereby the image is caused to vary, substantially as described.

2. An apparatus for producing a distorted reflected image consisting of a rotating element 25 carrying an uneven reflecting-surface substantially as set forth.

3. An apparatus for producing a distorted reflected image comprising in combination a

rotating element carrying an uneven reflecting-surface and a reducing-lens through 30 which the image formed by the reflecting-surface is observed, substantially as and for the purpose set forth.

4. An apparatus for producing a distorted reflected image, comprising in combination a 35 rotating element carrying an uneven reflecting-surface, means for producing rotation of the said element, and a clockwork-train carrying a governing-fly to regulate the speed of the rotating element, substantially as set 40 forth.

5. An apparatus for producing a distorted reflected image, comprising in combination a rotating element carrying an uneven reflecting-surface, means for producing rotation of 45 the said element, a handle for energizing the driving means, and a shutter which is opened by the energizing-handle, substantially as set forth.

In witness whereof I have hereunto set my 50 hand in presence of two witnesses.

WILLIAM KENNEDY-LAURIE DICKSON.

Witnesses:

FRANCIS W. FRIGOUT,  
H. D. JAMESON.