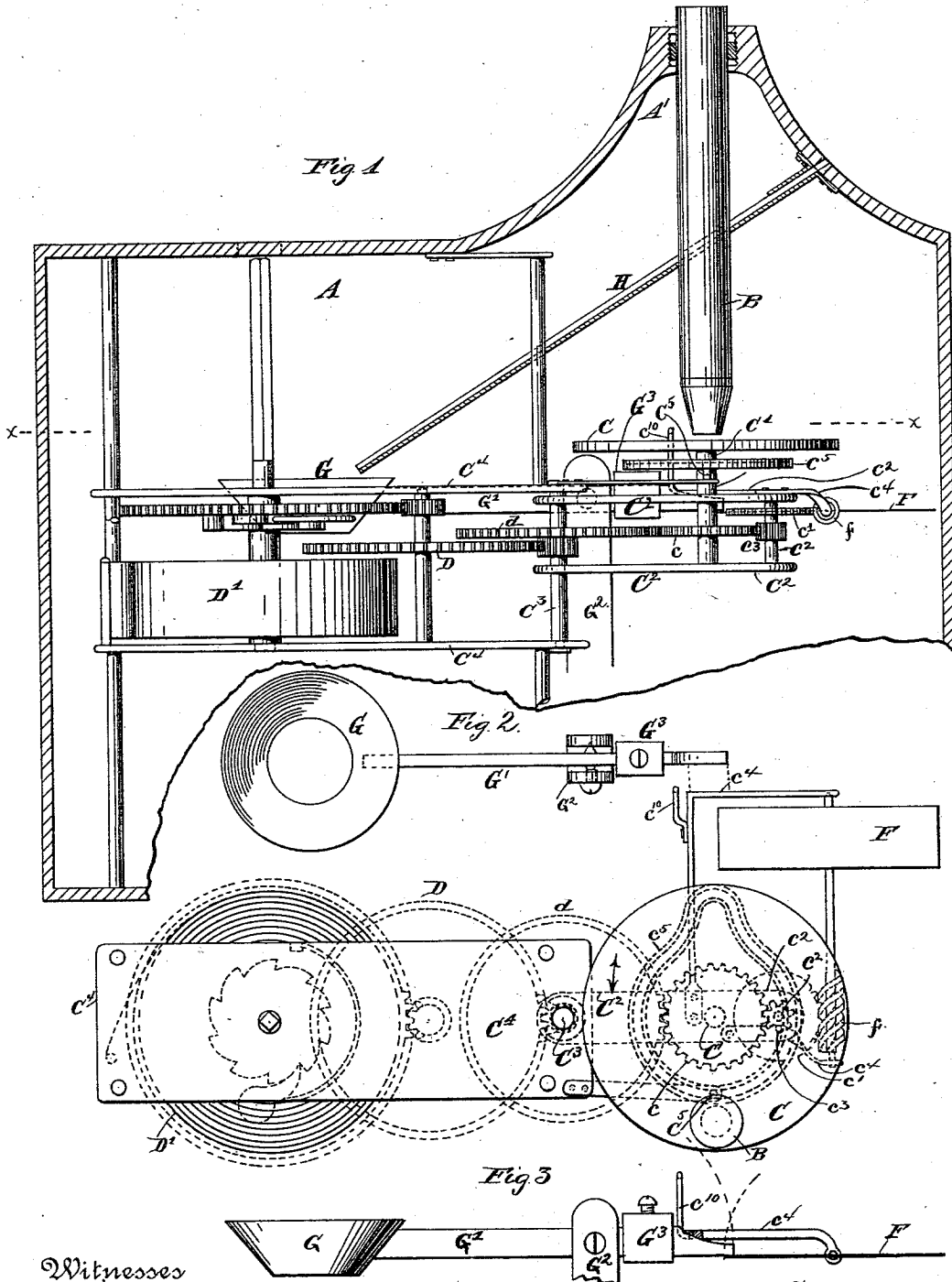


A. W. & A. H. ROOVERS.  
COIN CONTROLLED MICROSCOPE.

No. 439,189.

Patented Oct. 28, 1890.



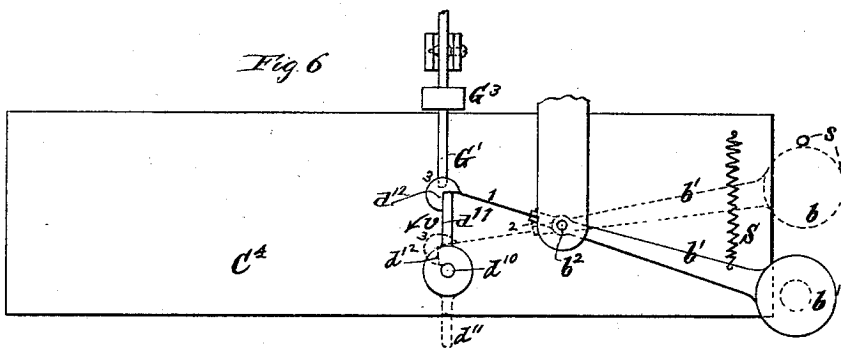
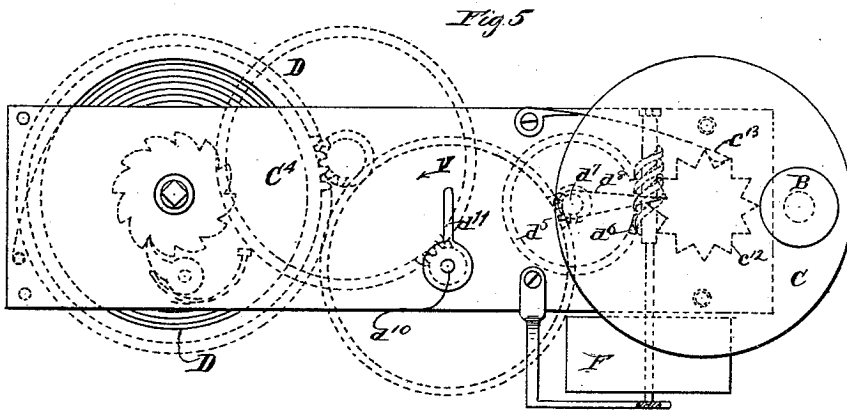
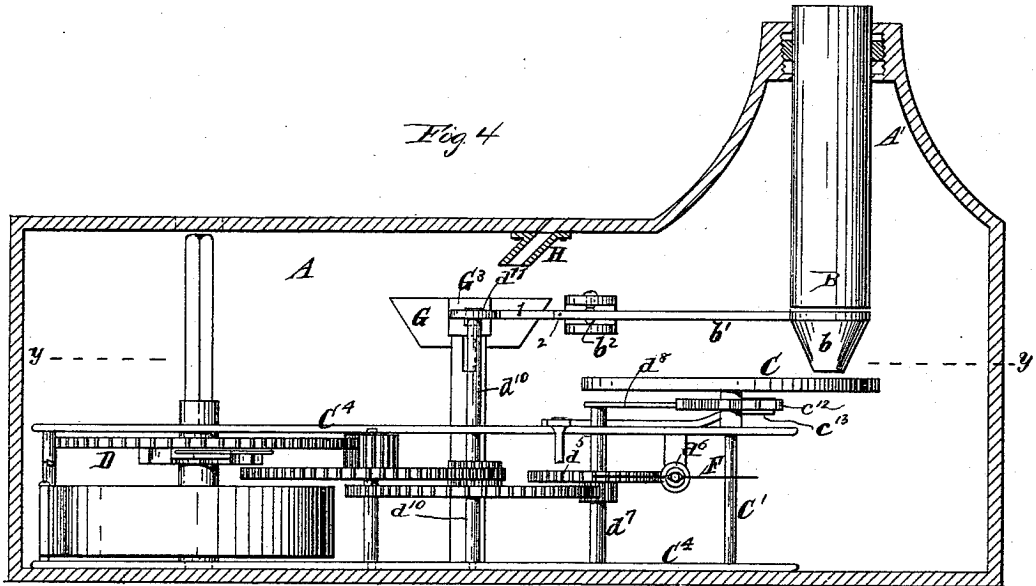
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# UNITED STATES PATENT OFFICE.

ALFRED W. ROOVERS AND ALEXANDER H. ROOVERS, OF BROOKLYN,  
NEW YORK.

## COIN-CONTROLLED MICROSCOPE.

SPECIFICATION forming part of Letters Patent No. 439,189, dated October 28, 1890.

Application filed December 3, 1889. Serial No. 332,416. (No model.)

To all whom it may concern:

Be it known that we, ALFRED W. ROOVERS and ALEXANDER H. ROOVERS, of Brooklyn, Kings county, and State of New York, have jointly invented a certain new and useful Improvement in Coin-Controlled Microscopes, of which the following is a specification.

In the accompanying drawings, Figure 1 is a sectional side elevation of a machine embodying our improvement. Fig. 2 is a horizontal section of the same, taken at the plane of the dotted line  $xx$ , Fig. 1. Fig. 3 is a side elevation of certain parts. Fig. 4 is a sectional side elevation of a machine of modified construction. Fig. 5 is a horizontal section taken at the plane of the dotted line  $yy$ , Fig. 4. Fig. 6 is a horizontal section taken at the plane of the objective of the microscope shown in Fig. 4, but illustrating only certain parts. Similar letters of reference designate corresponding parts in all the figures.

Referring first to Figs. 1, 2, and 3, A designates a box or case, which may be made of any suitable construction.

B designates a microscope arranged above the same and as here shown extending into it. Preferably the box or case will be provided with a turret  $A'$  around the microscope. The microscope may be of ordinary construction, having telescopic parts whereby it is rendered adjustable. One of these telescopic parts may be made adjustable.

C designates an object-support, which is here shown as made in the form of a circular plate or disk, and is intended to be made of glass or partly of glass and partly of other material. This support is intended to rotate, and in order that it may have a rotary movement it is secured to an upright shaft  $C'$ , supported by arms  $C^2$ . These arms  $C^2$  are fitted to a stud  $C^3$ , which is secured between two plates of a frame  $C^4$ . The arms  $C^2$  are combined with the stud  $C^3$ , so that they may be swung in the directions indicated by the double-headed arrows, Fig. 2. The rotary motion is derived from a train of wheels D, mounted upon shafts supported in the frame  $C^4$ , secured in the case A. A wheel  $d$  of this train engages with a pinion  $c$ , which is affixed to the shaft  $C'$ , thus imparting the desired

rotary motion to the object-support. To prevent a too rapid motion of the object-plate, the train of wheels has combined with it a flier or fan F. As here shown this flier is operated through a worm  $f$  on its shaft, which engages with a worm-wheel  $c'$ , affixed to a shaft  $c^2$ , which is supported by the arms  $C^2$  and has affixed to it a pinion  $c^3$ , which meshes with and derives motion from the pinion  $c$  of the shaft  $C'$ . The shaft of the flier is supported in brackets  $c^4$ , that are secured to one of the arms  $C^2$ .

The swinging motion of the object-support is produced by means of a stationary pin  $C^5$  engaging with a grooved plate  $c^5$ , which is affixed to the shaft  $C'$ . The pin  $C^5$ , as here shown, is secured to one of the plates of the frame. The groove of the plate  $c^5$  is concentric with the shaft  $C'$  throughout the greater part of its length, but at one point it extends off in a radial direction. When this radially-extending part is by the rotation of the object-support and its shaft  $C'$  brought into contact with the pin  $C^5$ , the object-support will be swung aside, and then the objects mounted upon it will be out of the range of the microscope. It is intended that this should happen just as the train of wheels D ceases to operate, and the plate  $c^5$  is arranged with the radially-extending portion of its groove suitably disposed to accomplish this result.

The train of wheels D may be driven by a spring  $D'$ , which will have to be wound up periodically. The arbor or shaft to which this spring is attached may extend to the extremity of the machine, so as to be accessible.

The train of wheels is controlled by a coin of a predetermined denomination operating through a coin-receptacle.

G designates a coin-receptacle mounted upon one arm of a lever  $G'$ , fulcrumed to a standard  $G^2$ , which may be secured to the bottom of the case A. The second arm of the lever  $G'$  is provided with a weight  $G^3$ , which is intended to adjust the lever into a horizontal position after its end which is provided with the standard, and the receptacle has been depressed and to hold it in a horizontal position except when a coin of the

proper denomination is dropped into the coin-receptacle. This weight  $G^3$  may be adjustable if desired. There is attached to the bracket  $c^4$ , which aids in supporting the flier  $F$ , an arm or wire  $c^{10}$ , which extends vertically upward and then horizontally over that arm of the lever  $G'$  which is provided with the weight  $G^3$ . The lever  $G'$  is so disposed with reference to the flier that when the lever is in its normal position it extends over the blade of the flier and blocks it, preventing any rotation. Whenever a coin of the proper denomination is dropped into the coin-receptacle and oscillates the lever  $G'$ , the arm of the latter which is provided with the weight  $G^3$  will be raised, and after being raised a short distance will move beyond the blade of the flier. The continued movement of the lever brings it into contact with the horizontally-extending portion of the arm or wire  $c^{10}$ , and by the latter it is precluded from swinging farther until the swinging movement of the shaft  $C'$  and object-support shall have carried the wire or arm  $c^{10}$  into such a position that it can no longer hold the lever. When this happens, the end of the lever which is provided with the coin-receptacle drops downward much farther and discharges the coin.

Whenever a coin of the proper denomination is dropped into the machine, the train of wheels will be released and the object-support will begin to move. As it begins to move it will swing into such position that its rotary motion will bring the objects mounted upon it beneath the microscope. During this rotary movement the objects will be exhibited. This having been done, the object-support will be moved out from under the microscope.

We will now describe the example of the improvement illustrated by Figs. 4, 5, and 6.

The case  $A$  may be of the same construction as that already described and may have a turret  $A'$  for a microscope  $B$ . Any suitable adjustment for the latter may be provided. The objective  $b$  of the microscope is in this example of the improvement mounted upon a lever  $b'$ , having a fulcrum  $b^2$ , allowing it to swing horizontally, so as to adjust its axis into line with the axis of the body of the microscope or out of line therewith to render the microscope useless.

$C$  designates the object-support. It is supported by the plates  $C^4$  of the train of wheels  $D$  and has merely an intermittent rotary movement. The train of wheels  $D$  is shown as driven by a spring, as in the other example of the improvement. In the train a worm-wheel  $d^5$  engages with a worm or spiral  $d^6$  affixed to the shaft of the flier or fan  $F$ , the latter being journaled in bearings supported by one of the plates  $C$  and serving to prevent a too rapid movement of the train of wheels.

The shaft  $C'$ , to which the object-support  $C$  is secured, has affixed to it a wheel  $c^{12}$ , which is shown as having pointed teeth or star-teeth. The shaft  $d^7$  of the train of wheels  $D$  has affixed to it an arm  $d^8$ , which once in each rota-

tion of the shaft engages with a tooth of the wheel  $c^{12}$  and thus intermittently rotates the object-support. The wheel  $c^{12}$  should have as many teeth as there are objects upon the object-plate. Each time that it is shifted by the arm  $d^8$  it will be rotated so as to present a new object under the microscope, the objects being spaced and disposed to correspond with the teeth of the star-wheel  $c^{12}$ . There may be combined with the star-wheel  $c^{12}$  a detent  $c^{13}$ , to prevent it from moving improperly. The shaft  $d^{10}$  of the train of wheels  $D$  is prolonged considerably above the upper plate  $C^4$ , and has affixed to its upper end, in the horizontal plane of the lever  $b'$ , an arm  $d^{11}$ . Every time the shaft  $d^{10}$  rotates it will oscillate the lever  $b'$  in one direction, so that the latter will carry the microscope-objective out of line with the body of the microscope. The shaft  $d^{10}$  makes one rotation for each rotation of the shaft  $C'$ . Hence after all the objects shall have been exposed by a complete rotation of the object-support the arm  $d^{11}$  will shift the microscope-objective into a position which will preclude further use of the microscope. The train of wheels is intended to stop in such a position that the arm  $d^{11}$  will hold the microscope-objective out of line with the microscope. The shaft  $d^{10}$  rotates in the direction indicated by the arrows  $v$  in Figs. 5 and 6, and, as there is on that arm of the lever  $b'$  which is acted upon by the arm  $d^{11}$  a hook  $d^{12}$ , the lever prevents the movement of the arm  $d^{11}$  more than one revolution at a time. To enable the lever  $b'$  to release the arm  $d^{11}$ , the arm of said lever which acts in connection with the arm  $d^{11}$  is provided with an end section 1. The end is of the kind which is commonly known as an "elbow-joint," and the pin 2 extends horizontally. The hook  $d^{12}$  is arranged upon this section 1 and is so beveled or inclined that the arm  $d''$  raises it, swinging the part 1 on the pin 2. The outer end of the section 1 is weighted, as shown at 3, to cause it to descend as far as the elbow-joint will allow it to descend, which will be into the horizontal plane of the arm  $d^{11}$ . The section 1 will preferably be made resilient, with a tendency to spring in the direction indicated by the arrow  $W$ , Fig. 6, so that if this section were vibrated upwardly, with the arm  $d^{11}$  in the position which it occupies in Figs. 5 and 6, it would on descending fall on the top of the outer portion of the arm  $d^{11}$ . The object of this is to prevent the section 1 from re-engaging the arm  $d^{11}$  before the latter makes a revolution.

The section 1 of the lever  $b'$  projects over the lever  $G'$ , having the coin-receptacle  $G$  attached to it. Obviously when that end of this lever which is provided with the coin-receptacle is depressed the other end will elevate the section 1 on the lever  $b'$  above the plane of the arm  $d^{11}$ , so as to effect the release of the train of wheels. When this happens a spring  $S$  will swing the lever  $b'$  as far as a stop  $s$  will permit it to move, thereby adjusting the mi-

roscope-objective into line with the bottom of the microscope. The stop *s* may be a pin upon any fixed portion of the case.

It will be clear from the foregoing description that when a coin of the proper denomination is dropped into the coin-receptacle the objective of the microscope will be moved into line with the body of the microscope and the objects will be successively brought beneath the microscope.

It will be seen that by both examples of our present invention we provide for making the use of a microscope dependent upon the dropping of a coin of a predetermined denomination into a machine comprising the microscope. In one example of our improvement we move the microscope, because in effect we move the instrument when we move its objective, and in the other example of our improvement we move the object-support, so that there will be no exposure of any of the objects. It is not essential to the plan of the latter example of the improvement that the object-support should have a bodily movement, for evidently if it were rotated in the manner described without having any bodily movement and one of a number of points divided off, so as to be brought successively beneath the microscope, should be left blank there would still be an object-support, which would be moved so as to render the microscope useless.

In our present improvement the objects may be illuminated in any suitable manner, either by a source of light outside or inside the case A.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of a microscope, an object-support, mechanism whereby a relative movement between the microscope and the object-support may be made for the purpose of rendering the microscope incapable of use, and a coin-receptacle controlling said mechanism, substantially as specified.

2. The combination of a microscope, an object-support movable bodily out of the range of the microscope, mechanism for moving the object-support in the manner described, and a coin-receptacle controlling the said mechanism, substantially as specified.

3. The combination of a microscope, an object-support, a rotary shaft upon which the object-support is mounted, swinging arms for sustaining this shaft, a grooved part affixed to said shaft, and a stationary pin engaging with the groove, said groove having a radially-extending portion, whereby when the object-support is rotated it will on completing its rotation be swung aside, substantially as specified.

4. The combination of a microscope, an object-support sustained by swinging arms, a coin-receptacle, a lever having the coin-receptacle affixed to it, a fan or flier, and an arm moving with the object-support as the latter swings to and fro, substantially as specified.

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