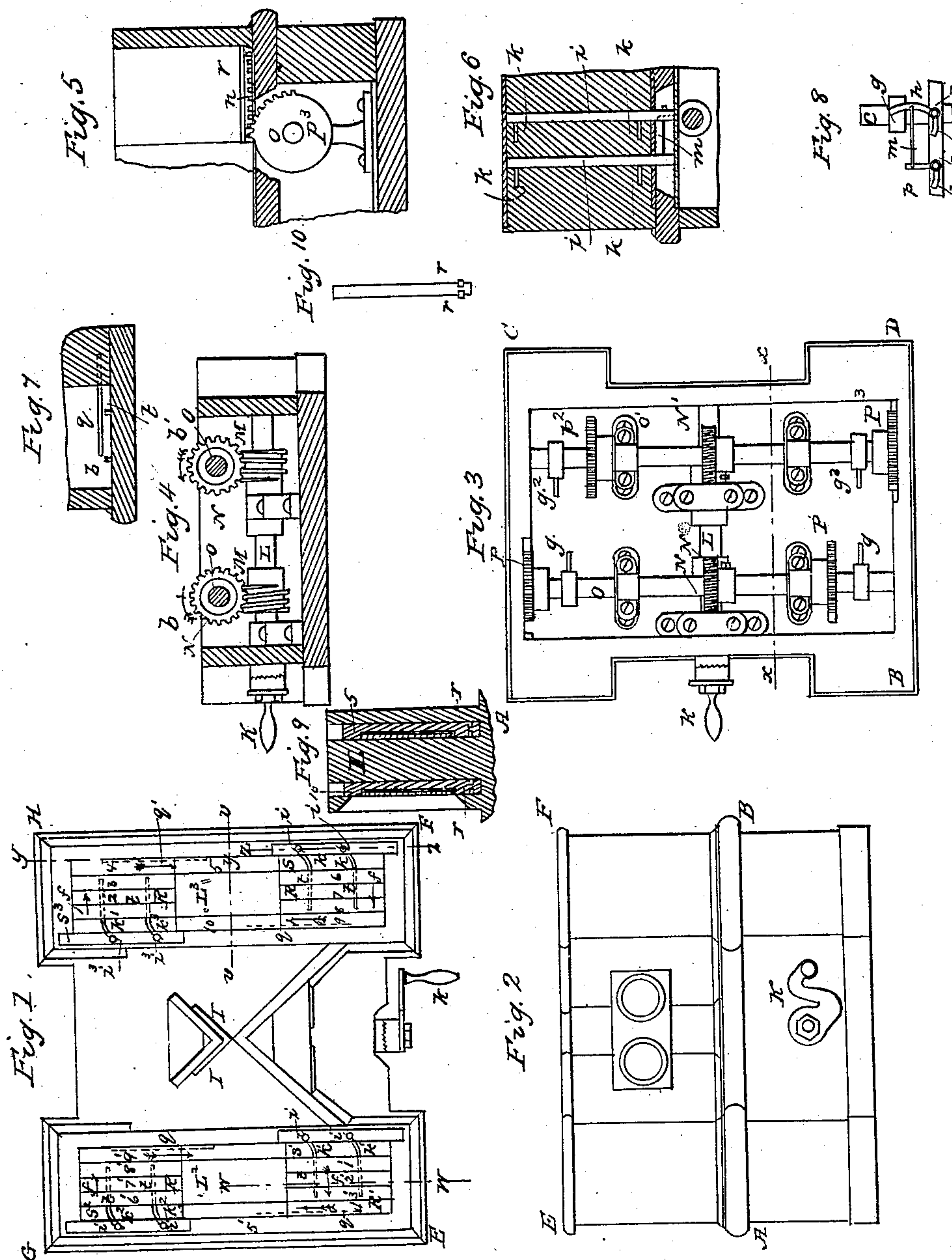


# SOUTHWORTH & HAWES.

## Moving Stereoscopic Pictures.

No. 13,106.

Patented June 19, 1855.





# UNITED STATES PATENT OFFICE.

A. S. SOUTHWORTH AND J. J. HAWES, OF BOSTON, MASSACHUSETTS.

## APPARATUS FOR MOVING STEREOSCOPIC PICTURES.

Specification of Letters Patent No. 13,106, dated June 19, 1855.

*To all whom it may concern:*

Be it known that we, A. S. SOUTHWORTH and JOSIAH J. HAWES, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Method of Arranging and Moving the Pictures of Stereoscopes, of which the following is a full, clear, and exact description, reference being had to the annexed drawings; making  
5 part of this specification, in which—

Figure 1 is a plan of a reflector stereoscope with our improvements attached, the top being removed to show the parts within; Fig. 2 a front elevation of the same.  
15 Fig. 3 is a plan of the lower box A B C D of Fig. 1 showing the parts which give motion to the picture, Fig. 4 a section upon the line X X of Fig. 3, Fig. 5 a section upon the line Y, Y, of Fig. 1, Fig. 6 a section on the line Z Z of Fig. 1, Fig. 7 a section upon the line W, W, of Fig. 1 the plates being removed to show the guides, upon which they slide. Fig. 8 will be referred to hereafter, Fig. 9 a section upon  
20 the line V, V of Fig. 1, Fig. 10 is an edge view of one of the plates.

Heretofore in instruments of this kind the pictures have been introduced and taken out by hand. My invention consists in giving to the pictures a panoramic motion into and out of the field of vision by means of machinery which will now be described.

In the accompanying drawings A, B, C, D, is the lower box containing the mechanism by which the pictures are moved. E, F, G, H, the upper box containing the pictures the mirror and the lenses.

In Fig. 1—I is the metallic mirror which in lieu of being made of two plates placed  
40 at an angle of  $90^\circ$  with each other, as has heretofore been customary is made of a single piece and ground and polished to the extreme angle, by which means the broken, interrupted line heretofore produced by the meeting of the two mirrors is avoided.

At the two ends of the box E, F, G, H are the compartments which contain the stereoscopic plates or pictures Nos. 1 to 10 and 1' to 10'. These plates with the glass  
50 by which they are covered are firmly secured in metallic frames or otherwise, the whole forming a plate or frame of about  $\frac{3}{8}$  inch in thickness, as seen in plan n Fig. 1 and in elevation in Fig. 5.

55 In Fig. 1 Nos. 10 and 10' are in the field

of vision;—they are caused to move around the solid block or box  $L^2$ ,  $L^3$ , in the center of the compartments which contain them in the following manner—K is a crank attached to the shaft L. This shaft carries four endless  
60 screws or worms M, which lie immediately beneath and engage with the cog wheels N upon the shafts O, by which means these latter shafts are caused to revolve as the crank K is turned. P are cogged segments  
65 secured to the shafts O, and seen in elevation in Fig. 5, the office of which is, at certain periods of the revolution of these shafts, to engage with the rack  $n$ , upon the bottom of the stereoscopic plates and bring  
70 them into the position required. The worms upon the shaft L, are so arranged that one of the shafts O with its cogged segments shall revolve in the direction indicated by the arrow  $b$ , and the other shaft with its  
75 cogged segments shall revolve in the opposite direction as indicated by the arrow  $b'$  (Fig. 4). These cogged segments project up through openings in the bottom of the upper box and engage with the racks on the  
80 bottom of the plates (Fig. 5).  $i$ , are vertical rods let into grooves in the side of the box;—they are provided with fingers  $h$  which at certain periods are caused to press against the plates and move them forward; 85 this motion is communicated to them in the following manner— $g$  are toes secured to the shafts O, and which in revolving strike against arms  $h$ , one only of which is seen in Fig. 8, the others being similar thereto. The  
90 arm  $h$  is attached to one of the rods  $i$ , and is connected with the other by means of the rod  $m$ , and arms  $p$ , by which means as the shafts O, continue to revolve, the fingers  $h$ , are thrown into the position seen in Fig. 1. 95 The cogged segments, the cog wheels and the toes are all secured to their shafts by set screws for the purpose of adjustment.

The crank K is attached to the shaft L, by means of inclined teeth and a spring in a  
100 well known manner that the mechanism may not be injured by turning the crank the wrong way, the latter being allowed to turn without the shaft.

Operation: In Fig. 1 the plates 10, 10',  
105 are in the fields of vision;—as the crank revolves the toes  $g$ , having passed the arms  $h$ , upon the vertical rods, the latter are left free to revolve when necessary. The cogged segments now engage with the racks upon  
110



the bottom of the plates 4, 9—4', 9', and drive them in the direction indicated by the red arrows; as these plates advance they move forward the plates 5, 10—5', 10', into the unoccupied spaces *s*, the plates depressing the fingers *h*, as they advance into recesses in the sides of the box revolving the rods *i*, into the position seen in Fig. 8, the teeth of the segment P, having now become disengaged from the rack on the bottom of the plates 9, 9', the said plates 9, 9', are allowed to remain stationary in the fields of vision during the time occupied by a semi-revolution of the shaft O. While this is taking place the toes *g* come again in contact with the arms *h*, and the fingers *h*, are again thrown into the position seen in Fig. 1, by which means the plates are moved forward in the direction indicated by the arrows *f*, Fig. 1. The spaces S are thus again made vacant, and as the teeth upon the segment P come around other plates are moved into these spaces and into the fields of vision as before, every revolution of the shafts O, bringing a new plate into the field of vision, carrying a new plate into each of

the spaces S and advancing all the plates in the compartments R a distance equal to the thickness of one plate. *b* are guides upon the bottom of the compartment T which enter between the teeth of the racks on the bottom of the plates and guide them in their motion. *q*, are guides seen in dotted lines in Fig. 1 upon the sides of the box which enter grooves *r* near the bottom of the plate and guide them in their longitudinal motion, preventing them from being raised up by the teeth of the cogged segments P.

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

Giving to the pictures of a stereoscope or other analogous instrument a panoramic motion into and out of the fields of vision, by means of mechanism substantially as herein described or by any other means equivalent thereto.

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Witnesses:

A. J. WHEELER,  
F. W. HURD.