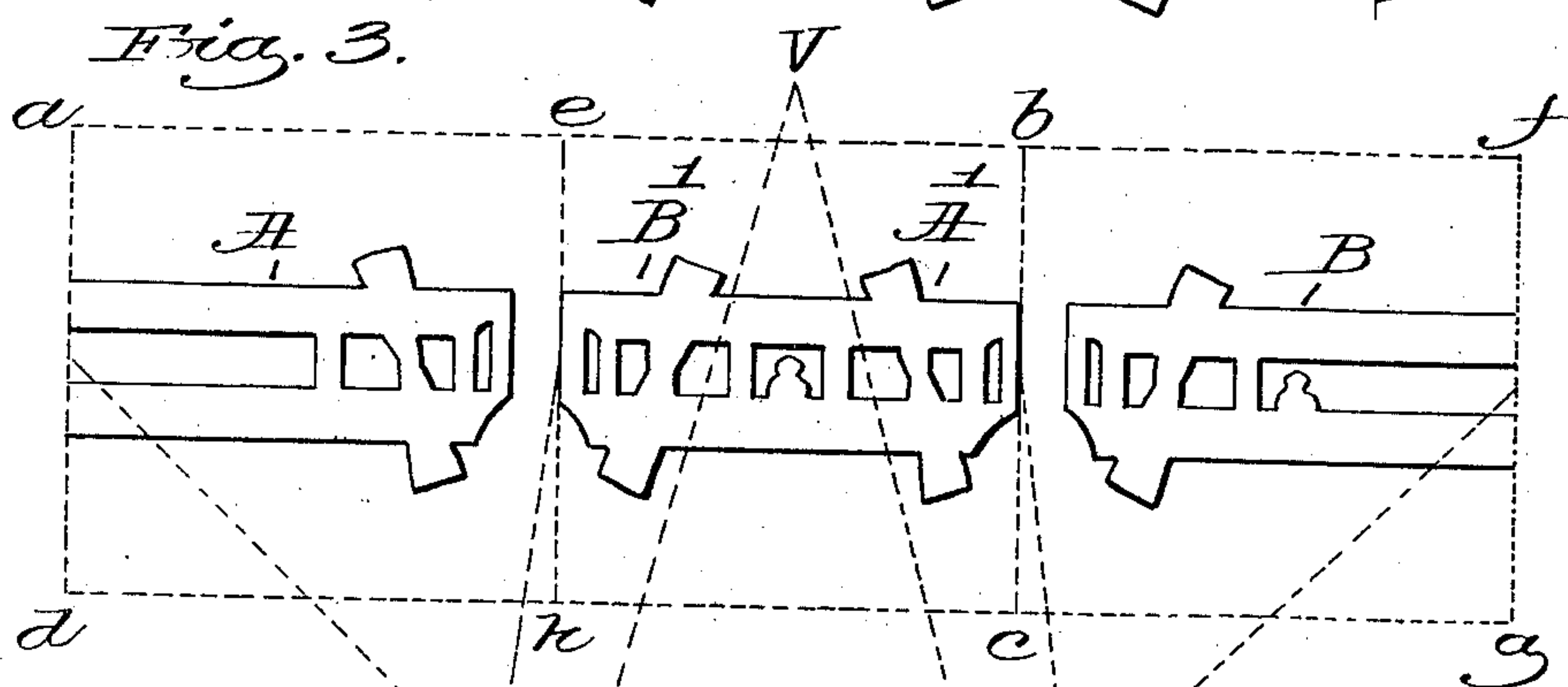
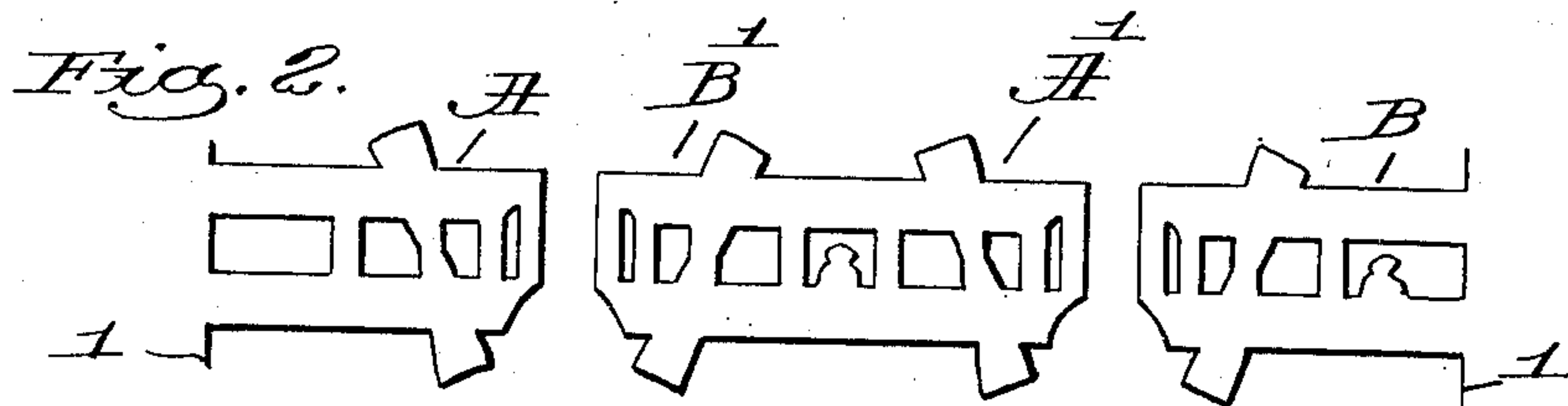
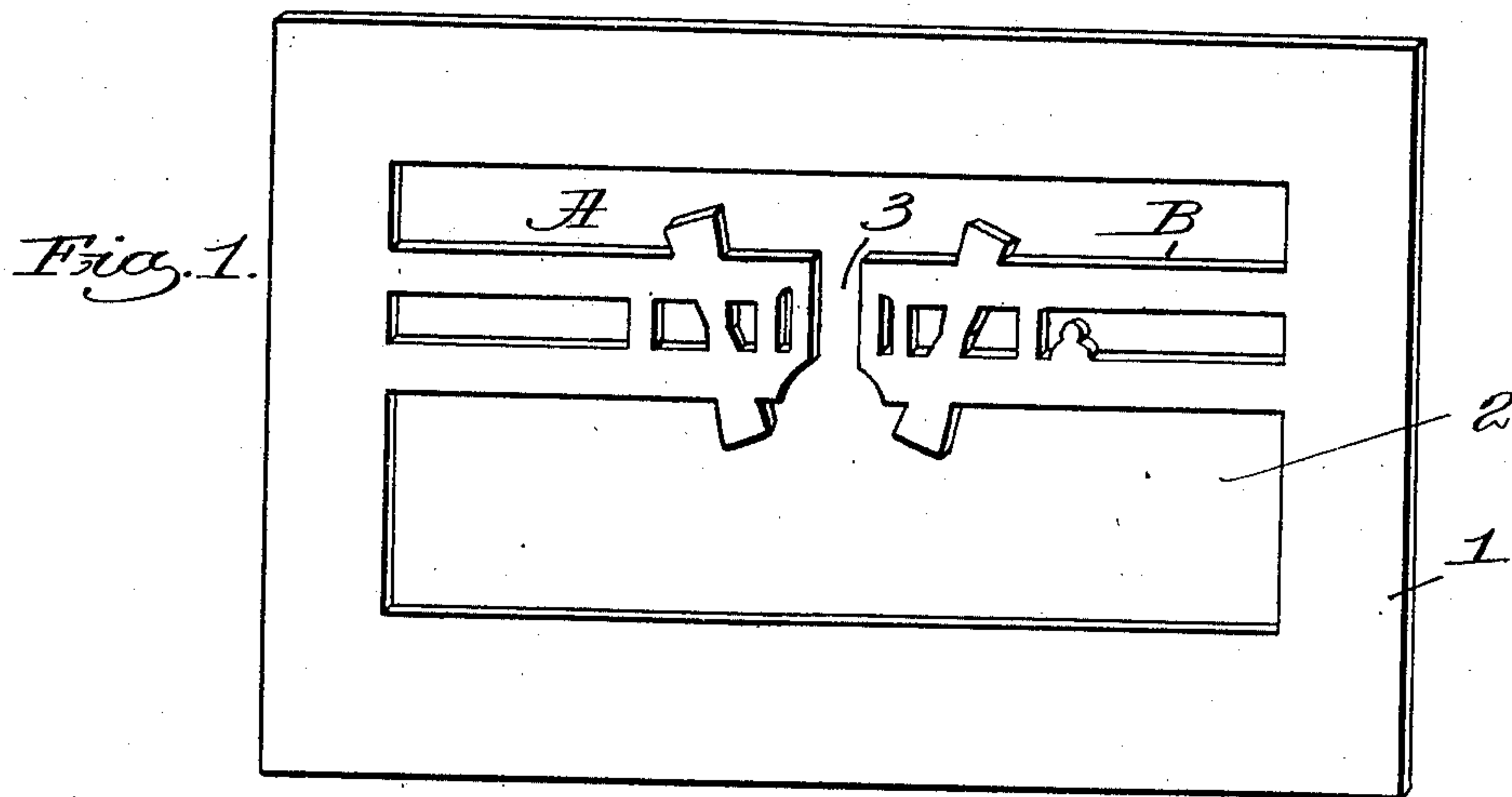


W. H. S. PEARCE.  
OPTICAL TOY.  
APPLICATION FILED SEPT. 30, 1910.

991,534.

Patented May 9, 1911.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. S. PEARCE, OF NEWTON, MASSACHUSETTS.

## OPTICAL TOY.

991,534.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed September 30, 1910. Serial No. 584,640.

*To all whom it may concern:*

Be it known that I, WILLIAM H. S. PEARCE, a citizen of the United States, and resident of Newton, county of Middlesex, State of Massachusetts, have invented an Improvement in Optical Toys, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object the production of an amusing and instructive toy so constructed and arranged as to produce effectively an interesting optical illusion whereby an object, or representation thereof, appears in its entirety to be floating in space.

My invention depends or is based upon certain phenomena of binocular vision, whereby when a given object is divided into separated parts and held at a suitable distance from the eyes the separated parts of the object will appear to have been transposed and united, the entire or completed object seemingly floating without any support.

In the practical embodiment of my invention I provide an open supporting frame, made conveniently of some opaque, flat and properly stiff material, such for instance as heavy card board, and within the opening an object is located, preferably in outline and divided transversely, the parts lying in the plane of the frame and being supported opposite each other by the sides of the frame and extended inward therefrom toward each other.

A sight opening is left between the contiguous inner edges of the separated parts of the object.

When the device is held at a short distance in front of the eyes and a distant point is viewed through the sight opening the separated parts of the object appear to be transposed in position and joined together to present the object in its entirety and floating in space.

Any desired object may be indicated, but for the best results such an object should be chosen as has a bold outline and which can be shown up clearly and unmistakably when the device is held against the sky.

The article can be cut, stamped or died out from card board, heavy paper, thin

sheet metal, or other suitable material, and will prove amusing as well as instructive in its use.

The novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a perspective view of an optical toy embodying my present invention; Fig. 2 is a detail in plan showing the appearance of the completed object as floating in space when a distant point is viewed through the sight opening; Fig. 3 is a diagram showing in general the lines of vision whereby the illusion is produced when the toy is used.

Referring to Fig. 1 a frame 1, made of card board, thin sheet metal, or other suitable flat material, and preferably rectangular in shape, presents an opening 2, in which the object is located. In the present instance I have illustrated in outline an airship, and such object is transversely divided into the parts A, B, said parts being opposite each other and extended inward from the sides of the frame 1. Said parts of the object are formed integral with the frame and lie in the plane thereof, the inner edges of the parts A and B approaching each other but leaving a clearance space or sight opening 3 between them. In practice the outer ends of the parts A and B are somewhat elongated, for the better effect of the illusion, and referring to Fig. 1 it will be seen that said parts are reversed in position. That is, the part A, at the left of the frame, is actually the right hand part of the object, and similarly the part B at the right of the frame is the left hand part of the object.

To use the device the frame is held upright with its bottom edge horizontal at a distance of from 6 to 18 inches or more from the eyes of the observer, and said observer looks with both eyes at some distant point, such as the sky, a cloud, etc. When so viewed the complete object A, B, in its entirety, will be seen, and it appears to be floating in space, without any support whatever, the parts A and B being apparently transposed and joined properly together. In Fig. 2 I have endeavored to illustrate this illusion, the actual parts A and B of the object being at the left and right, while



the image, or apparent object appears in its entirety, but with the position of the parts reversed, as at B', A'.

The diagram, Fig. 3, indicates at E, E' the eyes of the observer, and V is supposed to be the distant point viewed by the observer through the sight opening 3, Fig. 1. The parts within the dotted rectangle *e, f, g, h* are seen by the left eye E', and the parts within the rectangle *a, b, c, d* are seen by the right eye E, while the overlapping parts in the rectangle *e, b, c, h* are seen by both eyes and constitute the image, apparently the complete object B', A' in its entirety. When both eyes look at the distant point V the rectangle *e, f, g, h* is covered by the vision of the left eye, the rectangle *a, b, c, d* by the vision of the right eye, while the middle rectangle *e, b, c, h* is covered by the vision of both eyes, producing the described illusion.

The diagram in Fig. 3 is necessarily distorted, as it is impossible within the limits of the permissible space of the drawing to indicate accurately the distance of the point V.

Any desired object may be employed, provided it is of such a character as will permit of its production in bold outlines, and the frame opening 2 is not necessarily rectangular, but in practice I have found such an arrangement to produce highly satisfactory results.

Various changes or modifications in details may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims annexed hereto.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. As an article of manufacture, an optical toy comprising an open frame, and an object separated transversely into two portions sustained respectively by the left and right hand sides of the frame and inwardly extended therefrom toward each other to leave a sight opening between their contiguous inner edges, whereby the complete object as an entirety appears to float in space

within the frame when a distant point is viewed through the sight opening.

2. As an article of manufacture, an optical toy comprising a flat, open frame, and an object separated into right and left hand portions sustained respectively by the left and right hand sides of the frame in the plane thereof and extended inward toward each other to leave a sight opening between their contiguous edges, whereby the complete object as an entirety appears to float within the frame and unsupported when a distant point is viewed through the sight opening.

3. As an article of manufacture, an optical toy comprising, a flat frame having a rectangular opening, and a flat object separated into right and left hand portions sustained respectively by the left and right hand sides of the frame opposite each other and extended into the frame-opening opposite each other to leave a central sight opening between their contiguous edges, whereby when a distant point is viewed through such opening the portions of the object appear transposed and joined as an entirety and float unsupported within the opening of the frame.

4. As an article of manufacture, an optical toy comprising a flat frame having a rectangular opening and supporting at its opposite upright edges the two parts in outline of a transversely divided object, the said parts lying in the plane of the frame opposite and extended toward each other in the opening thereof, to leave a sight opening between their contiguous inner edges, whereby when a distant point is viewed through the sight opening the two parts of the object appear to be transposed and joined together and present the object in its entirety as floating in space.

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

WILLIAM H. S. PEARCE.

Witnesses:

JOHN C. EDWARDS.

THOMAS J. DRUMMOND.