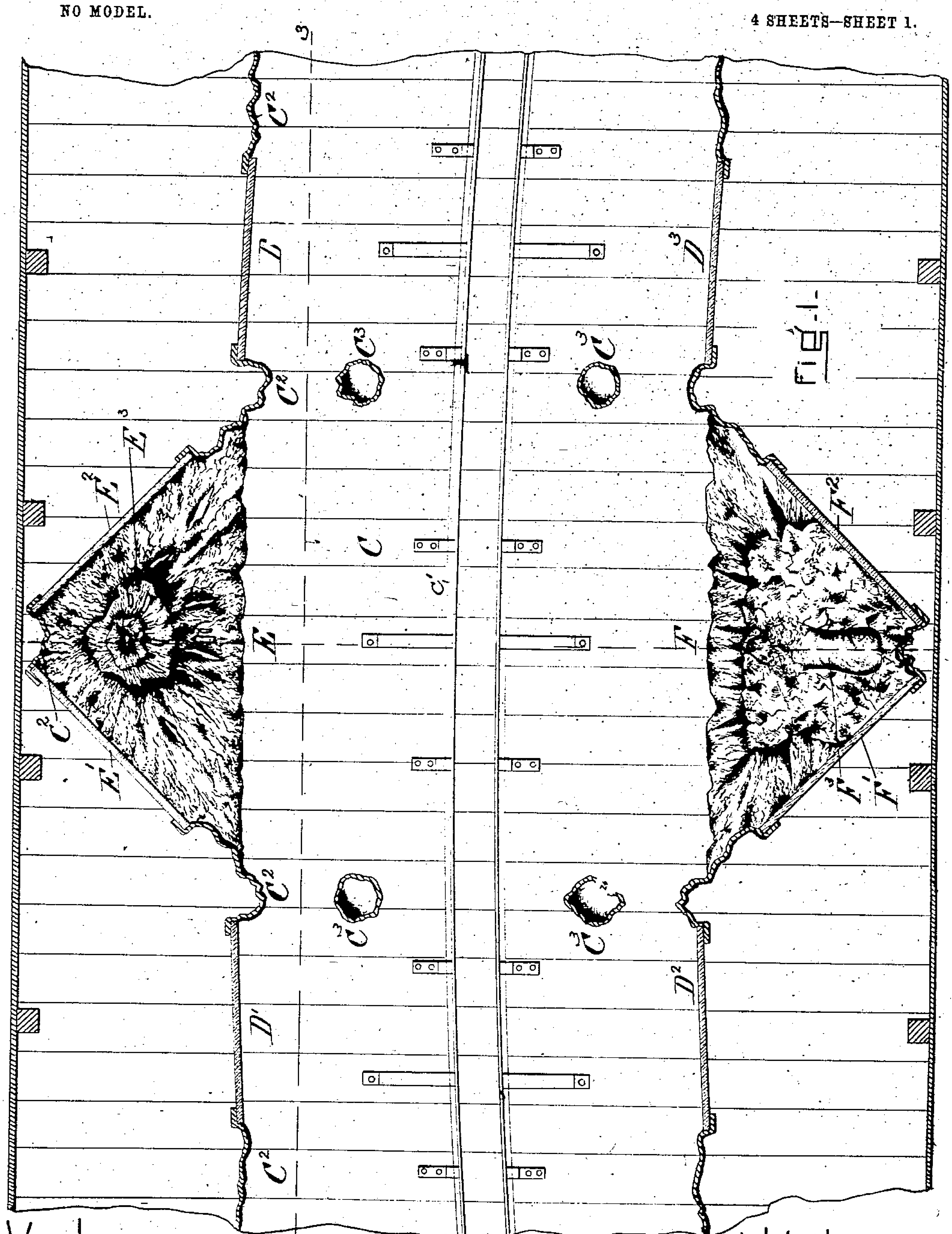
No. 733,359. PATENTED JULY 7, 1903.

A. A. WELSH.

ILLUSION DEVICE.

APPLICATION FILED NOV. 12, 1902.

NO MODEL. 4 SHEETS—SHEET 1.



WITNESSES:

M. E. Flaherty

Saul Lippenstein

INVENTOR:

Adam A. Welsh

by Geo. O. G. Brown

his attorney

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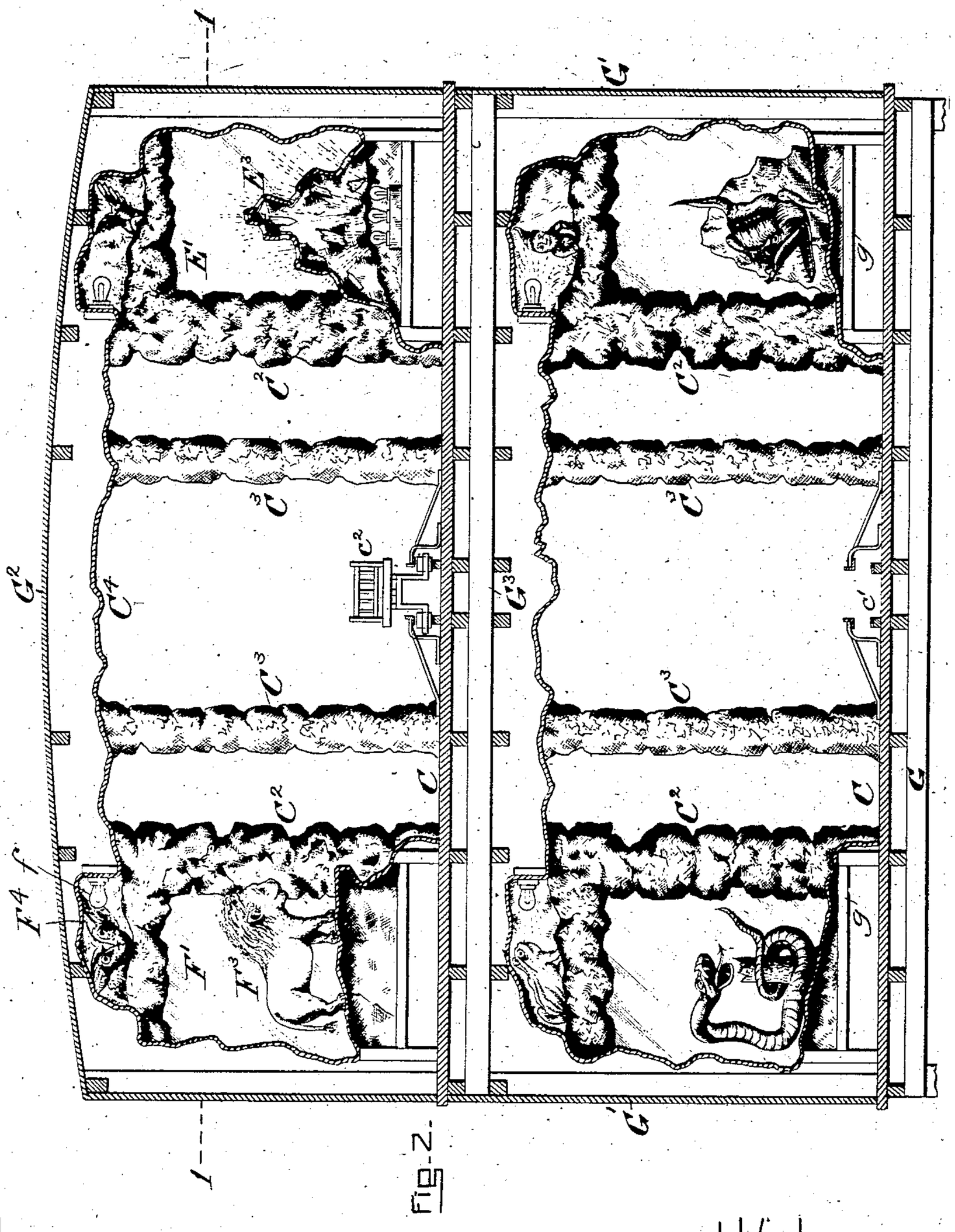

FIG 2

WITNESSES=
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NO MODEL. 4 SHEETS—SHEET 3.

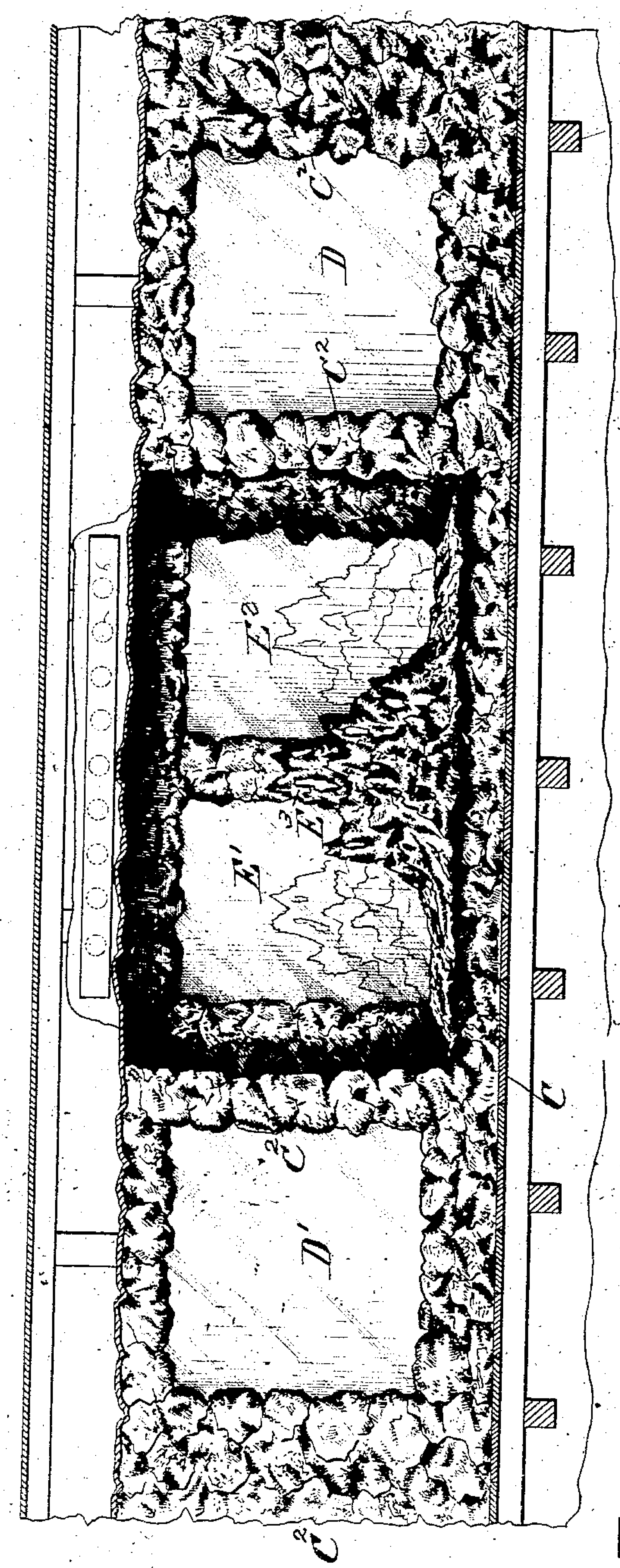

Fig. 3.

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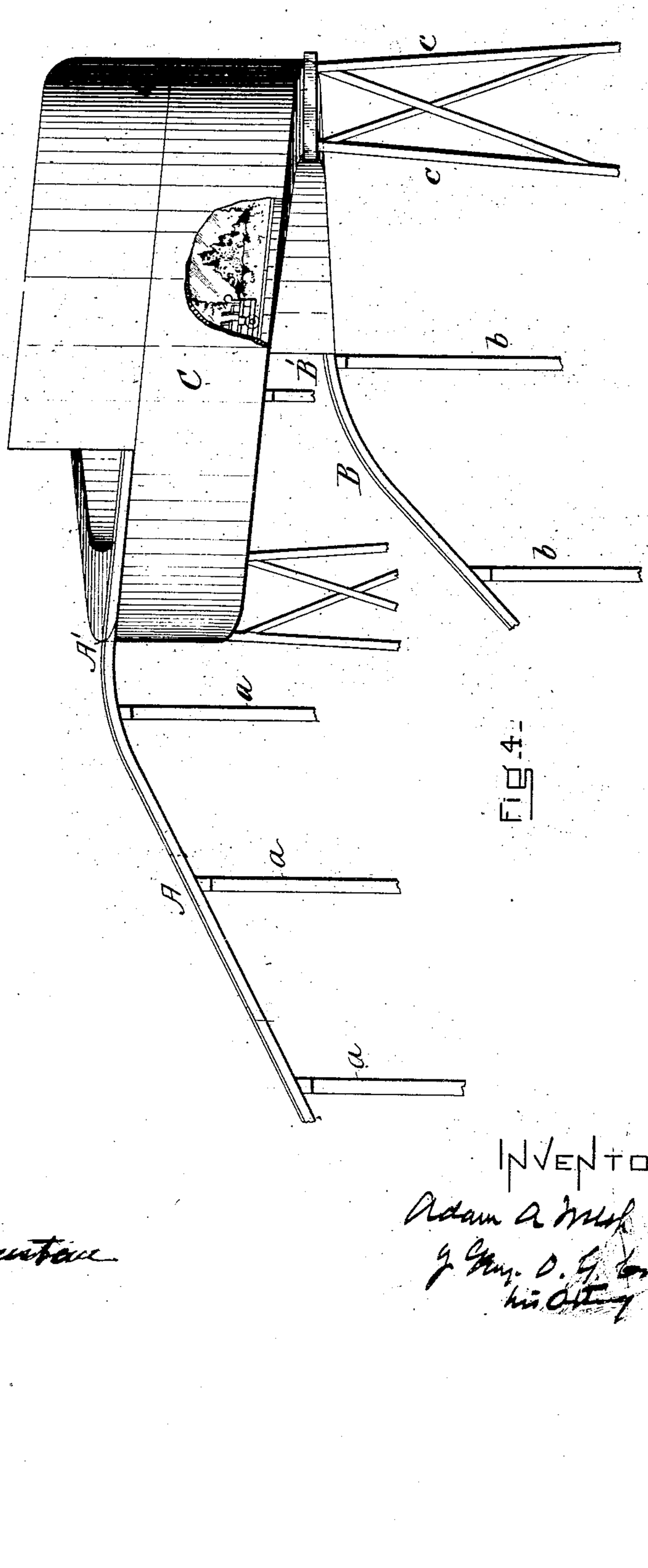

Fig. 4.

WITNESSES=

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Paul Lippencott Jr.

INVENTOR=

Adam A. Welsh

by Geo. D. G. Lorenz

his Atty

No. 733,359. Patented July 7, 1903.

UNITED STATES PATENT OFFICE.

ADAM A. WELSH, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED STATES CELESTIAL PARADISE CONSTRUCTION COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

ILLUSION DEVICE.

SPECIFICATION forming part of Letters Patent No. 733,359, dated July 7, 1903.

Application filed November 12, 1902. Serial No. 131,040. (No model.)

To all whom it may concern:

Be it known that I, ADAM A. WELSH, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Illusion Devices, of which the following is a specification.

My invention is especially useful upon what are known as "roller-coasters" or "scenic railways," which are now so frequently used in amusement-parks, whereon a light car travels by gravity. Upon such railways covered passage-ways are sometimes built to represent tunnels, and the illusion device which I have invented and which is described below may very well be used in such tunnels, although it may also be used elsewhere. I shall describe it, however, in such location; and it consists in a peculiar arrangement of mirrors whereby objects properly located with relation thereto may be reflected in such a manner as to be multiplied many times, and hence by very simple means heighten the attractiveness of the railway.

I have shown my invention applied to a single roadway, this being its most effective mode of use; but it will be evident to any one skilled in the art that its peculiarities may be utilized under different circumstances without departing from the spirit of the invention.

My invention will be understood by reference to the drawings, in which—

Figure 1 is a horizontal section on line 1 1 of Fig. 2, Fig. 2 being a vertical cross-section of a structure containing my illusion device. Fig. 3 is a longitudinal vertical section on line 3 3 of Fig. 1, Fig. 4 being a view of the structure in which preferably my illusion device is mounted.

It will be evident from reading the description which follows that the illusion device may be arranged and utilized under varying conditions. I have shown it, however, arranged in a tunnel of spiral form, as shown in Fig. 4, which is mounted upon a staging and approached by railway-tracks adapted to be used with light cars and to operate by gravity.

Referring first to Fig. 4, A is the approaching road-bed, mounted upon suitable supports *a*, and B is the retreating road-bed, mounted upon supports *b*. Upon suitable supports *c* is mounted a spiral covered roadway consisting of a covered tunnel C of about a turn and a half, connecting at A′ with the approaching track A and at B′ with the retreating track B. This tunnel may be lined with scenic paintings or in any other attractive manner and is provided at various places with a form of illusion device such as is now to be described. C′ represents the floor of the tunnel, *c*′ being the railroad-track and c^2 one of the cars. The side walls of this tunnel, as indicated in Figs. 1, 2, and 3, are lined with hangings representing, for example, rocks, as indicated at C^2, and also is provided with posts C^3, decorated to represent columns of rough rock. Into the walls are set a series of mirrors D D′ D^2 D^3, preferably arranged at a slight angle to the line of railroad-track *c*′, though nearly parallel therewith, these mirrors being in pairs opposite each other. In the walls C^2 also are recesses E F on opposite sides of the track. At an angle with the track and forming the back walls of the recess E are placed two mirrors E′ E^2 at substantially right angles to each other, the apex of the angle forming the farthest point of the recess from the track. On the opposite side of the track are mirrors F′ F^2, arranged in the same manner to form the rear walls of the recess F. In each recess is set, as at E^3 F^3, any object desired—such, for example, as the representation of a lion, a volcano, a serpent, or an alligator—as shown in the drawings. The result of this arrangement is that the object placed within the recess when properly lighted may be multiplied many times. Thus the object E^3 is not only reflected in the mirrors E′ E^2, but is also reflected by cross-reflection from the mirrors F′ F^2 or by reflection from the mirrors F′ F^2 only in conjunction with the object F^3. If the onlooker happens to be in right position, it may be reflected from either one of the mirrors D^2 D^3, or, again, in another position a reflection may be had from the mirror D which may give the reflection of the recess in the mirror F′. It will thus be seen that any one passing over the railroad-track *c* in a rapidly-

moving car will in a short space of time see a very large number of reflections, so that with very little material very striking effects may be produced upon the observer. The ceilings of these recesses are also preferably recessed, as shown in Fig. 2 at E^4 F^4, and in these ceiling-recesses may be placed a series of electric lamps or other lighting devices *e f*, which will throw a strong light not only upon the ceilings, but also downward upon the objects and the mirrors, the objects being also lighted by other lights, if thought best. The ceiling of the roadway may be closed in by a covering C^4, also representing stonework, to give the whole a homogeneous appearance, or in any other way which will tend to create the illusion desired.

In constructing this illusion device cross-beams G are built up upon the supports *c* to the spiral tunnel, and upon these cross-beams G are laid joists longitudinally of the structure, upon which are laid the planks of the floor C′, on which is carried the railway *c′*. The mirrors and objects above referred to are supported upon suitable platforms *g*. The whole is walled in by side walls G′ and roof G^2, the second floor, where needed, being provided in the same manner with cross-beams G^3, suitably supported intermediate of the cross-beams G and the roof G^2, the two-story arrangement being shown in Fig. 2. The centers of the columns C^3 may be extended upwardly to form supports for the second story and roof. It is evident that the mirrors in this arrangement may be placed at somewhat-varying angles, depending upon the radius of the railroad-track, without departing from the spirit of my invention, which consists in having certain of the mirrors arranged substantially parallel (by which I mean, preferably, not exactly parallel with the railroad-tracks, but at a slight angle thereto) and by having the recessed mirrors arranged at substantially (though not necessarily exactly) right angles to each other, and, as shown, at substantially an angle of forty-five degrees with the railroad-track. These points of detail are immaterial. Moreover, it is equally clear that those mirrors substantially parallel with the railroad-track may be omitted entirely in some cases, leaving the recesses alone with their mirrors to produce the required effects. Moreover, if thought best, the road may be double-tracked, provided the levels of the other parts of the structure will permit, so that the same illusion may be either seen twice by persons going in the same direction or else by persons going in an opposite direction, these being variations in the use of my illusion and not in its essence. I have shown this tunnel arranged in the form of a spiral of more than one turn, and hence in a portion of it the tracks are arranged one over the other; but this is also a detail of track arrangement which may be varied to suit the circumstances. In any case the illusion devices may be arranged along the walls of the entire tunnel or not, as thought best, the objects to be reflected being different in different recesses to suit the taste of the builder. Such details do not form necessarily a part of my invention, which relates to the arrangement of mirrors in connection with a roadway, substantially as described, whereby objects placed at certain points may be multiplied indefinitely, and when these mirrors are arranged as shown many interesting illusions may be seen.

I have shown the roadway as single and as arranged for the transit of cars, but boats may be used instead or a pathway for walking may be substituted, the objects to be reflected of course being chosen with reference to the use to which the device is to be put. Moreover, in some instances the objects may be omitted, the onlooker in this case getting reflections of himself.

What I claim as my invention is—

1. An illusion device comprising a roadway, mirrors arranged at an angle thereto and to each other to form a recess, and an object for reflection located within range of said mirrors and said roadway, as described.

2. An illusion device comprising a roadway, two pairs of mirrors on opposite sides of said roadway, the mirrors of each pair arranged at an angle to each other and to said roadway and forming a recess, as described.

3. An illusion device comprising a roadway, a pair of mirrors arranged at an angle thereto and to each other to form a recess, and an object for reflection located on the opposite side of said roadway from such mirrors and substantially opposite the adjacent edges of said mirrors, as set forth.

4. An illusion device comprising a roadway, mirrors located at opposite sides thereof, parallel to each other and at an angle with said roadway, as set forth.

5. An illusion device comprising a roadway, mirrors located on opposite sides thereof at an angle of substantially forty-five degrees with said roadway, and at substantially right angles to each other, as described.

6. An illusion device comprising a roadway, mirrors arranged at an angle thereto and to each other and a mirror located on the opposite side of said roadway and parallel therewith, as set forth.

7. An illusion device comprising a roadway, mirrors arranged at an angle thereto and to each other, and mirrors located opposite to each other on opposite sides of said roadway parallel therewith and in proximity to one of said first-named mirrors.

8. An illusion device comprising a roadway, two pairs of mirrors on opposite sides of said roadway, the mirrors of each pair arranged at opposite sides of said roadway and forming a recess, and two other mirrors located opposite to each other on opposite sides of

said roadway substantially parallel therewith and each in proximity to one of said recesses.

9. An illusion device comprising a roadway, mirrors located on opposite sides thereof at an angle of substantially forty-five degrees with said roadway, and at substantially right angles to each other, and two mirrors located opposite each other on opposite sides of said roadway and substantially parallel therewith, as set forth.

10. An illusion device comprising a roadway, two pairs of mirrors, the mirrors of each pair being arranged at substantially right angles to each other and at an angle of substantially forty-five degrees with said roadway, and two pairs of mirrors each mirror of each pair being located opposite the other mirror and each pair of mirrors being in proximity to the ends of said angularly-arranged mirrors and parallel with said roadway, as described.

11. In a scenic railway, a tunnel comprising two or more recesses arranged opposite each other, each recess containing an object, and the rear walls of said recesses being formed of mirrors whereby the images of said objects may be multiplied.

12. In a scenic railway, a tunnel having mirrors located opposite each other forming portions of the wall thereof and having recesses located opposite each other, each provided with an object, the rear walls of said recesses being made up of mirrors, as and for the purposes described.

13. In a scenic railway, a tunnel having one or more recesses, each being provided with an object, the rear walls of each recess being formed of mirrors, the ceiling of each recess being also recessed and provided with lights, as and for the purposes set forth.

14. In a scenic railway, a tunnel curved in the form of a spiral whereby the entrance and outlet to said tunnel are on different levels and a portion of said tunnel is arranged in two stories, said tunnel being provided with mirrors located on opposite sides thereof, and a railway-track between said mirrors, as and for the purposes described.

In testimony whereof I hereunto set my name this 4th day of November, 1902.

ADAM A. WELSH.

Witnesses:
GEORGE O. G. COALE,
M. E. FLAHERTY.