T. FUGATE.

Box-Stereoscope.

PATENTED SEP 20 1870

107476

FIG. 1.

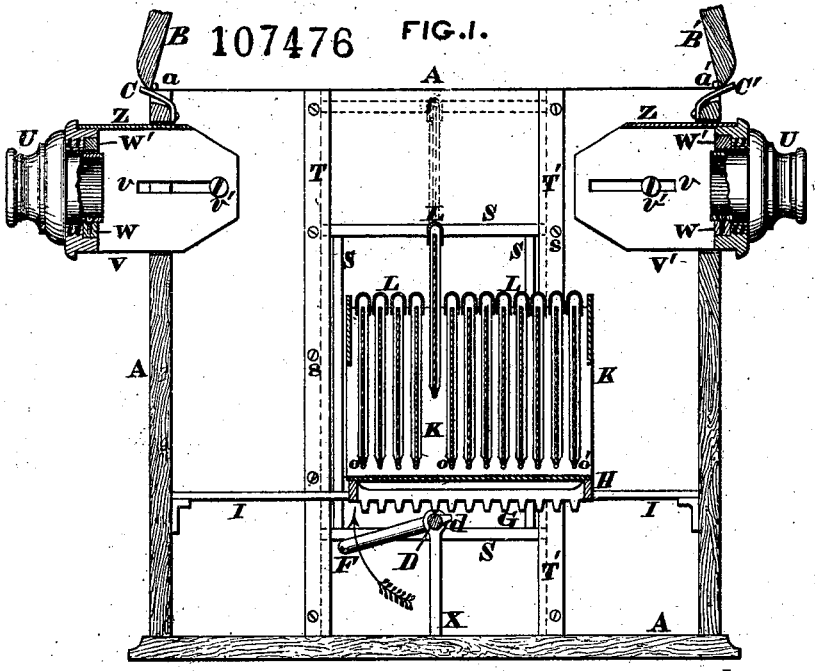


FIG. 2.

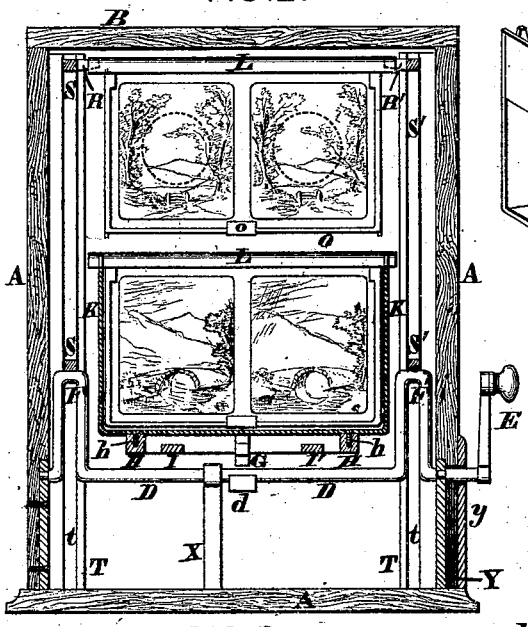


FIG. 3.

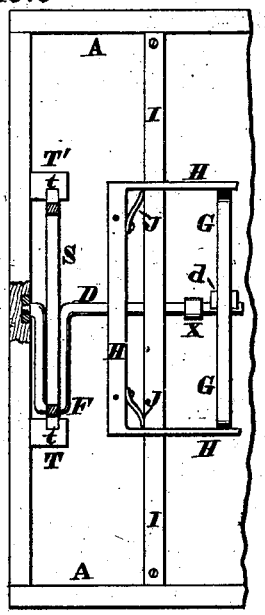


FIG. 4.

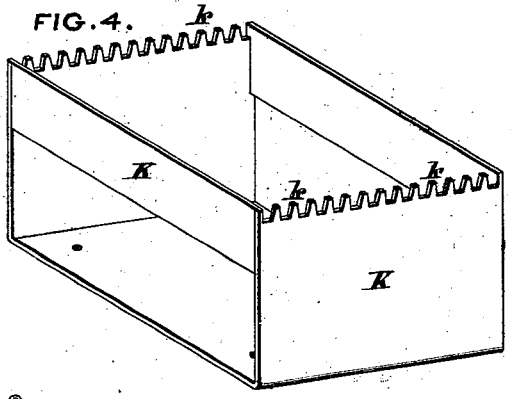


FIG. 5.

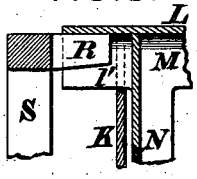


FIG. 6.

FIG. 7.

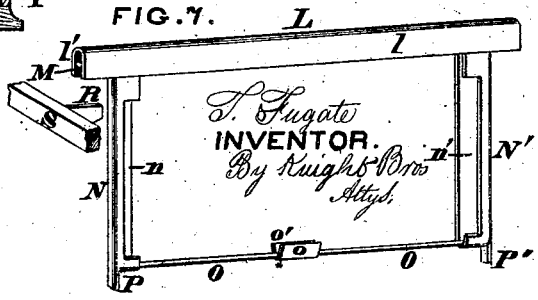
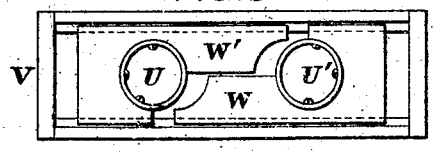


FIG. 8.



ATTEST.
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Box-Stereoscope.

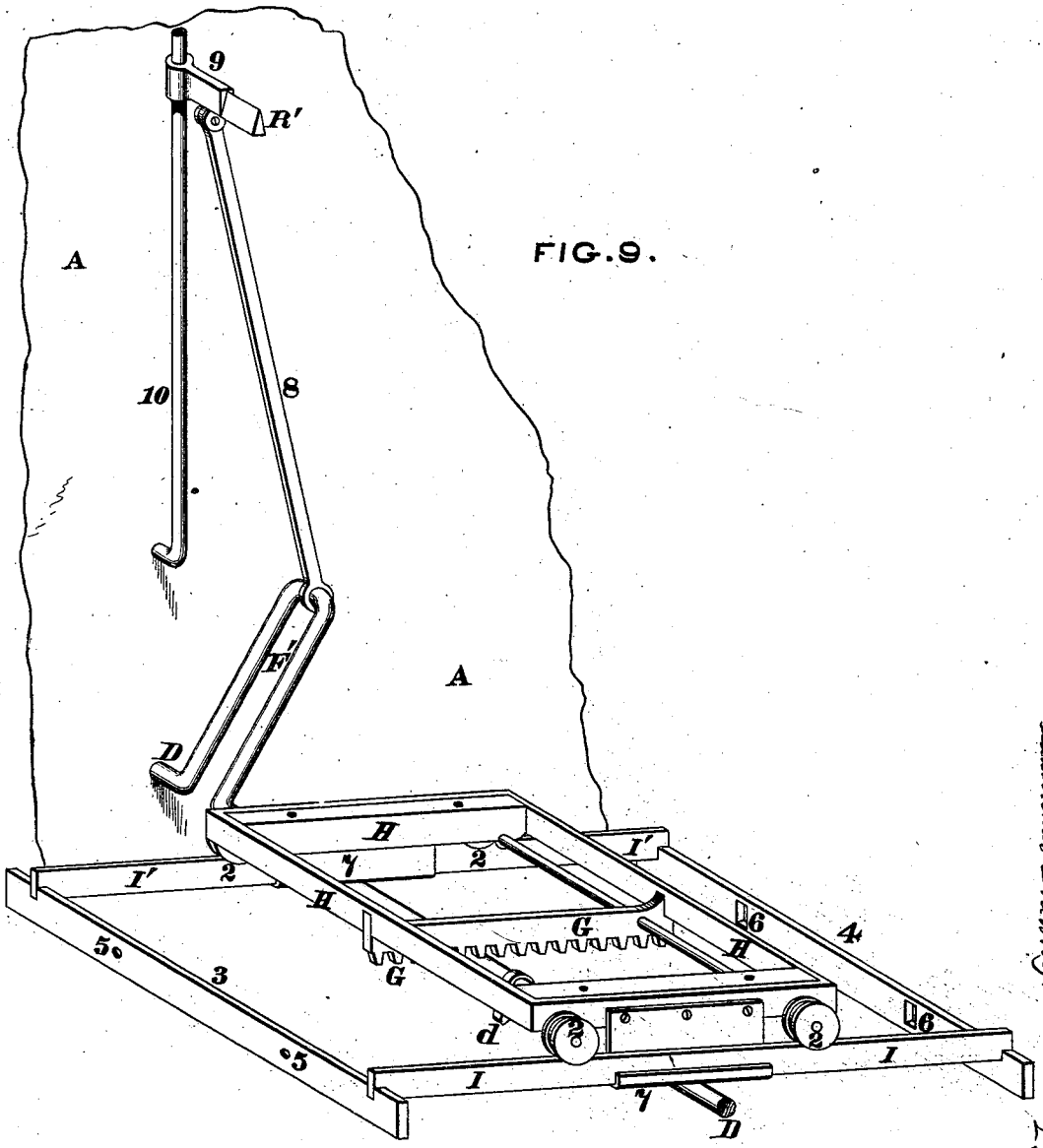

FIG. 9.

Additional Drawing.

2 Sheets - Sheet 2.

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THOMAS FUGATE, OF CINCINNATI, OHIO.

Letters Patent No. 107,476, *dated September* 20, 1870.

IMPROVEMENT IN BOX-STEREOSCOPES.

The Schedule referred to in these Letters Patent and making part of the same.

I, THOMAS FUGATE, of Cincinnati, Hamilton county, Ohio, have invented new and useful Improvements in Box-Stereoscopes, of which the following is a specification.

Nature and Object of the Invention.

This invention relates to the class of box-instruments which contains a series of stereoscopic views that are capable of being elevated one by one, so as to be brought within the focus of a pair of lenses, or of two pairs, situated at opposite ends of said instrument; and

The first part of my improvements relates to a peculiar arrangement of devices, whereby a single view or slide is lifted from a suitable carriage or conveyer, and, after being inspected for any desired length of time, is returned to the conveyer, and another one taken up; it being understood that said conveyer is caused to advance a proper distance after one view is deposited in it, and before the succeeding one is elevated therefrom.

My invention also relates to an improved device for holding the carriage.

General Description with Reference to the Drawing.

Figure 1 is a vertical section of my improved box-stereoscope, taken in the plane of the lenses;

Figure 2 is a vertical section, at right angles to the preceeding one, or in the plane of the views;

Figure 3 is a half plan of the carriage and its accessories;

Figure 4 is a perspective view of the conveyer that contains the views;

Figure 5 is an enlarged section, taken through one end of a view-frame;

Figure 6 is a side elevation of a portion of the conveyer, with a number of view-frames in position;

Figure 7 is a perspective representation of a view-frame; and

Figure 8 is a rear elevation of the devices for shifting the lenses.

Figure 9 is a perspective view, showing a modification of the carriage, and also of the devices for elevating the views.

In the modification shown in fig. 9, the carriage H is represented as mounted upon wheels 2, which run upon the tracks I I′, and said tracks may be united to bars 3 and 4, one of which is furnished with apertures 5, so as to permit of the tracks being attached to the ends of box A.

Slots 6, in the other bar, 4, enable the proper adjustment of tracks I I′, so as to bring them to a horizontal position, thereby facilitating the movement of carriage H.

In order to prevent any accidental displacement of the carriage H, it is provided with spring-clips 7, which embrace the rails I I′ in the manner shown.

In this illustration the cranks F′, instead of supporting the lower member of the gate S′, is shown as having a pitman, 8, attached to it, whose upper end is secured to a reciprocating block, 9, from which projects the lifter R′.

The reciprocating block 9 is confined to a vertical path by a guide-bar, 10; but, if preferred, said block may slide within a suitable under-cut groove in the sides of box A.

A represents the box of the instrument, which is open at top, and has hinged to it, at *a a′*, the lids B B′, whose under sides are provided with mirrors, or otherwise arranged to reflect light upon the views.

These lids, when opened, are maintained at the desired angle by means of tongues C C′, that are secured to the ends of the box A, and which bear against the hinged edges of the lids with sufficient force to prevent them falling.

Journaled within the sides of the box is a rotating shaft, D, which is provided with an external winch or handle, E, and two internal cranks or cams, F F′.

Projecting from the shaft D, and in an opposite direction to the cranks F F′, is a tooth, *d*, which is adapted to engage, at every revolution of said shaft, with a rack, G, that is secured to the under side of a carriage, H.

The carriage H slides upon two guide-bars or tracks, I I′, that extend from end to end of the box, and at a proper height above the bottom of the same, and accidental displacement of said carriage is prevented by the spring or springs J, that bear against the sides of said tracks.

Secured to the carriage H, by screws *h*, is the view-receptacle or conveyer K, whose sides are provided with a series of vertical projections, *k*, which correspond in number with the teeth of the rack-bar G, and said projections are for the reception and retention, in their proper positions, of the view-frames, which are constructed in the following manner:

The upper member of each frame is composed of a piece of sheet metal, L, whose sides are recurved, as shown at *l l′*, thereby forming a trough between them.

Projecting downwardly from the top member L, and at a proper distance from the ends thereof, are two other recurved pieces of sheet metal, N N′, whose lower extremities are united by a wire, O, having at its mid-length two clips, *o o′*.

A portion of each of the end pieces N N′ is cut away, as shown at *n n′*, so as to permit of the views being slipped within said end pieces, and shoved up into the recess M, after which they are allowed to drop as fast as necessary, and to be retained by the clips *o o′*.

Projecting from the bottom of the end pieces N N' are points P, which prevent the frames becoming entirely dislodged from their conveyer K, whenever the views are elevated for the purpose of inspection.

The end pieces N N' fit snugly within the sides of the conveyer K, and their recess d portion M rests upon the projection *k*, as shown in fig. 6.

The two ends of the upper members L, that project beyond the pieces N N' and the sides of the conveyer K *k*, are intended for the reception of studs or spurs R R', that are attached to two vertically-reciprocating slides or gates, S S'.

These reciprocating gates are located at opposite sides of the box A, and are confined within guides T T', which are secured to said sides by screws *s*.

These gates are simply dropped into the grooves *t* of said guides, and allowed to rest upon the cranks F F', so that, at every entire revolution of said cranks, these gates ascend and descend.

The tubes U U', which contain the lenses, are applied to drawers V V', that are capable of being slid out or in, so as to obtain the proper focus for pictures.

These drawers are confined to a proper path by the slots *v* and screws or studs *v'*.

The tubes U U' project through and play freely within slots *u* of the drawer, and the inner ends of said tubes are attached to two shiftable blocks, W W', which arrangement permits of the lenses being adjusted toward or from each other, so as to be exactly suited to the eyes of different spectators.

The middle of the rotating shaft D may be journaled within a support, X', that projects from the bottom of the box.

The slot Y, in one side of the box, through which the crank-shaft is inserted, is concealed by a plate, *y*.

The entrance of light is prevented, when the drawers V are opened, by plates Z, which extend completely across the tops of said drawers, as shown in fig. 1.

Operation.

The operation of my instrument will be understood by referring to fig. 1, from which it will be seen that the rotation of the shaft D elevates the gates S S', through the medium of cranks F F', and, in so doing, the spurs R R' engage under the ends of the frames L, which project beyond the conveyer K, and thereby lift said frame, with its accompanying views, out of the conveyer.

When the cranks have reached the vertical position shown in fig. 2, the frame has been completely elevated, and the picture brought directly in line with lenses, which elevated position of the picture can be maintained as long as the spectator desires.

By completing the revolution of the crank, so as to bring it to its lowermost position, the frame is deposited upon its projection *k*, from which it had previously been elevated.

While the cranks F F' are passing their lower "dead-points," the tooth *d* is engaging with the rack G, in such a manner that, by time said cranks are about to elevate the gates, the carriage H has been moved a sufficient distance to cause the spurs R R' to engage with a frame next to the one which had just been deposited in the conveyer, that is, lifted out and returned to the receptacle, in the manner previously described.

This operation is repeated until every view in the instrument has been inspected, and the carriage H moved along its ways until it strikes the end of the box A, after which the rotation of the crank-shaft must be reversed, so as to exhibit the pictures, by running the carriage in an opposite direction.

For the purpose of more readily distinguishing the parts, the elevated frame in fig. 2 is represented as being lifted entirely out of the conveyer K; but in actual practice this would not be the case, the intention being that the points P at the bottom of said frames shall always remain within the conveyer.

The reciprocating gate S is shown as composed of an open frame-work of rods, but it is evident that it may be a simple block or slide, or the cranks of the rotating shaft may have pitmen to them, whose upper ends could carry the lifters R, the pitmen being guided in a proper path by vertical grooves in the sides of the box.

I am aware that a stereoscope has been constructed in which a circular holder is made to revolve by the action of a tooth and rack, the pictures being lifted from the holder by cranks, in a manner somewhat similar to mine, as in the patent of S. Perry, 7th of June, 1859, and I, therefore, make no claim to such; but

I claim as new and of my invention—

1. The combination, substantially as described, of the rotating shaft D *d*, cranks or eccentrics F F', rack G, guides I I', conveyer K K', frames L *l l'* M', lifters R R', and vertically-reciprocating gate S, or its mechanical equivalent, for the purpose described.

2. In combination with the guides or rails I I' and sliding view-conveyer K, the spring or springs J, for the purpose herein explained.

In testimony of which invention I hereunto set my hand.

THOMAS FUGATE.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.