# J. W. Storrs.

## Stereoscope.

No. 73472 Patented Jan. 21, 1868.

Fig. 5.

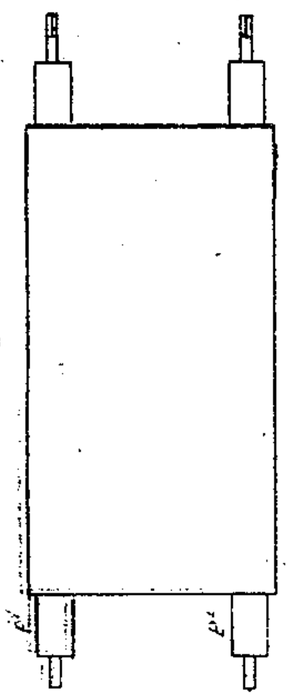


Fig. 2.

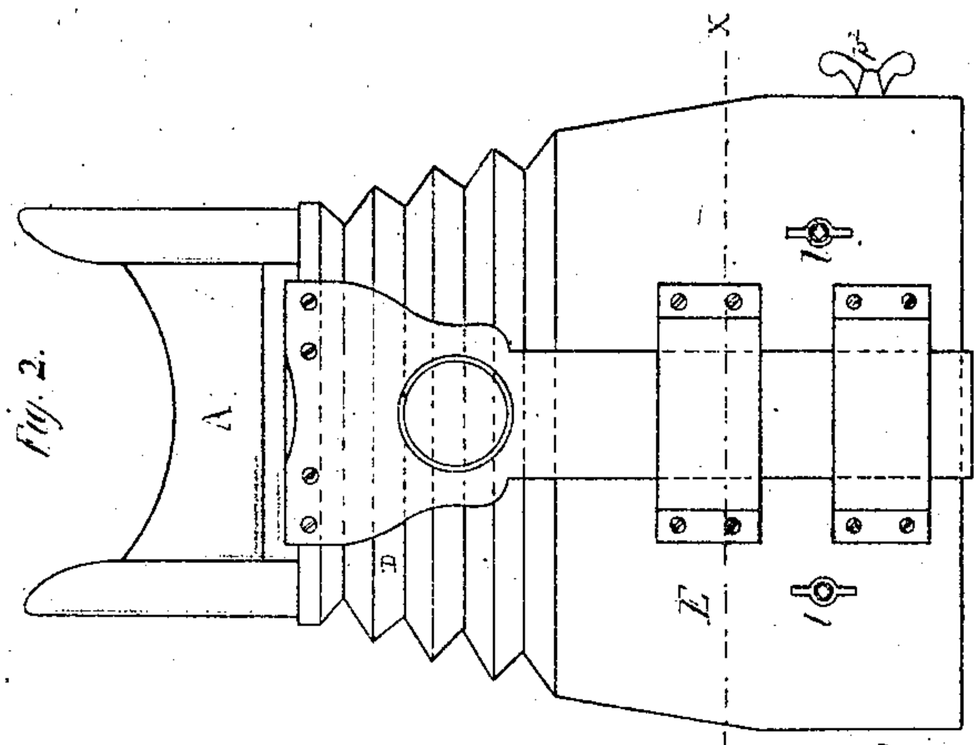


Fig. 1

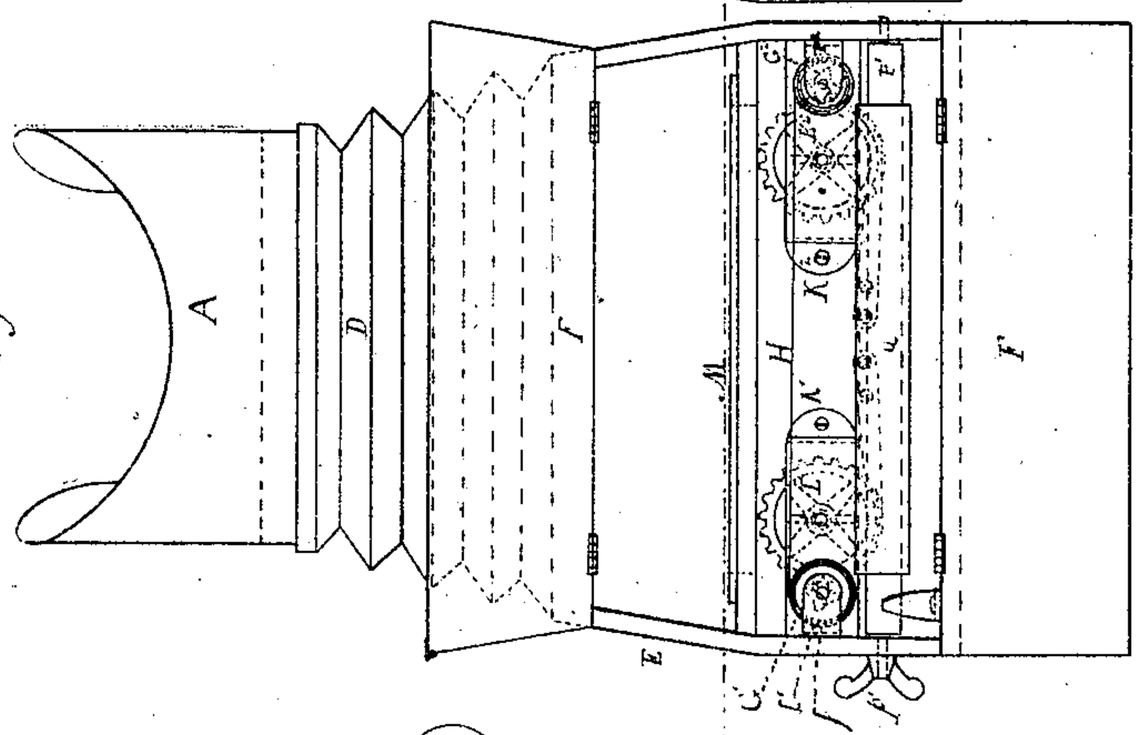


Fig. 3.

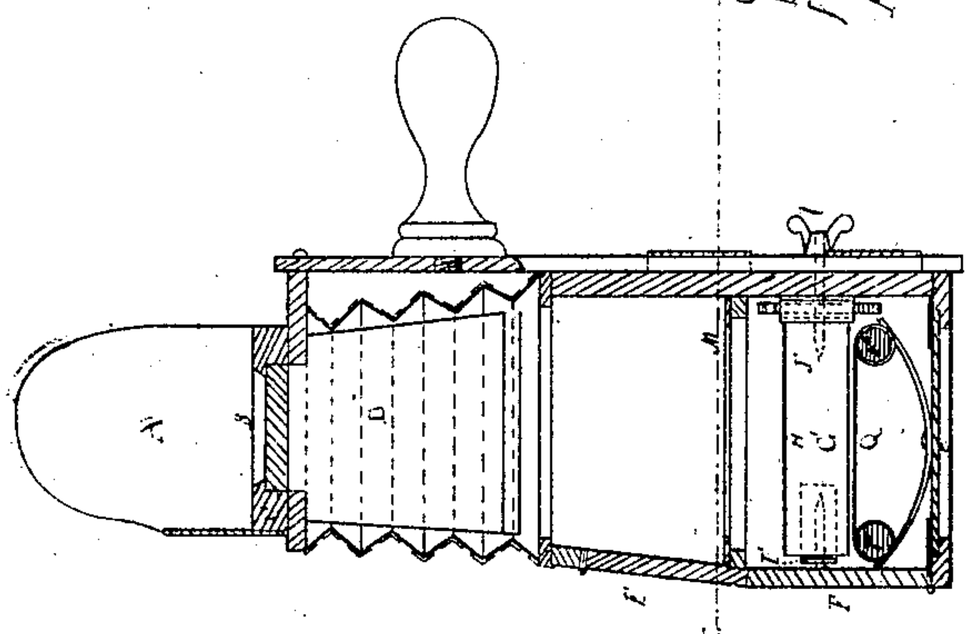
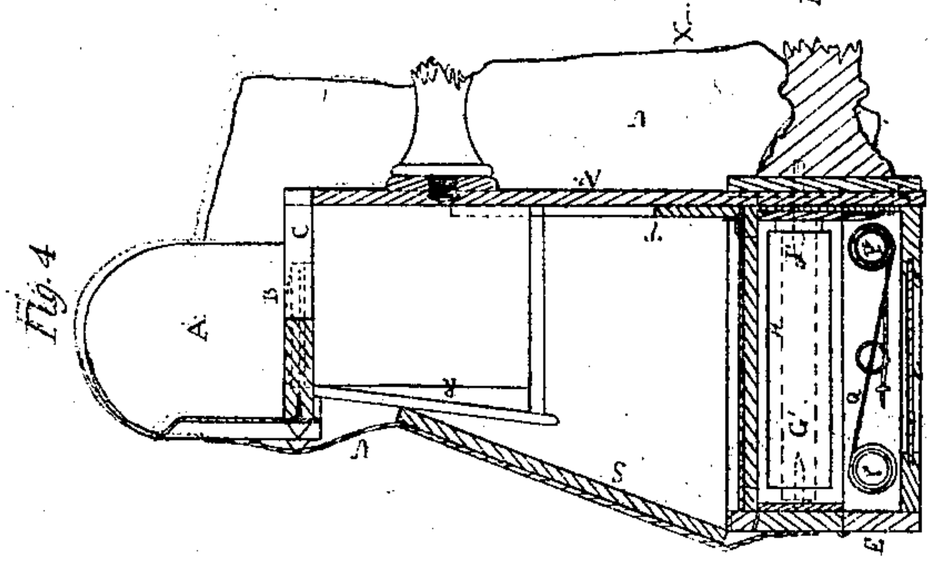


Fig. 4



Witnesses:

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# United States Patent Office.

JOHN W. STORRS, OF BIRMINGHAM, CONNECTICUT.

*Letters Patent No.* 73,472, *dated January* 21, 1868.

## IMPROVEMENT IN STEREOSCOPES.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN W. STORRS, of Birmingham, in the county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Stereoscopes; and I do hereby declare that the following is a full and exact description thereof.

I will first describe what I consider the best means of carrying out my invention, and will afterwards designate the points which I believe to be new. The accompanying drawings form a part of this specification.

Figure 1 is a plan view of my stereoscope complete, with the doors F F open, so as to show the interior parts.

Figure 2 is a corresponding view of the same, turned bottom side up, with the doors closed.

Figure 3 is a longitudinal vertical section through the entire stereoscope.

Figure 4 is a corresponding section through a modified form of my stereoscope.

Figure 5 is a view of a part of my stereoscope detached from the rest.

Similar letters of reference indicate like parts in all the figures.

A is a shade or eye-piece of the ordinary construction. B B are lenses. C is a surrounding case. D is a bellows-frame, adapted to allow of increasing and diminishing its length, while perfectly excluding the light, and E is a rigid casing of wood or other suitable material, having its rear face formed with a plate of clear glass, *e*. The top of this case E is formed with folding covers, F F, which are lined with tin-foil, and adapted to be adjusted at various angles to throw the light upon the views within, as is well known.

Stereoscopic views mounted in or on rigid frames of pasteboard, or other suitable material, may be introduced at or about the plane indicated by the red line, X X, and may be supported in their proper position by any suitable guides. The light may in such case be allowed to fall upon them through the glass, *e*, or may be thrown down at a proper angle from the top, or the light may come from both of these sources, in either of which conditions the picture will appear with all of the advantages pertaining to the ordinary stereoscope.

$G^1$ $G^2$ are cylindrical rolls of wood or other suitable material, carrying a continuous scroll of photographic pictures, properly pasted, or otherwise secured together by their edges, as indicated by H. This long strip of paper H is rolled up on one of the rollers $G^2$, and is drawn off from the opposite roll $G^1$, or *vice versa*. The axes of the rolls $G^1$ $G^2$ are mounted in spring bearings at the top, as indicated by $I^1$ $I^2$, and are sustained in position at the bottom by being fitted upon the short shafts $J^1$ $J^2$, which are mounted in the frames $K^1$ $K^2$, and carry pinions *j j*, which receive motion from correspondingly-toothed wheels L L of larger diameter. These wheels L L are turned by means of the buttons *l*, which are accessible from below, as indicated. When it is desired to change the view, one of the buttons *l* is turned by the action of the hand, and imparts a rapid rotation to the connected roll $G^1$ or $G^2$, thus drawing away the picture which has been in view, and substituting another.

M is a shield, perforated with two circular openings, as indicated, to allow the pictures to be properly seen. The central bar between them is always available as a guide, to show when the pictures are sufficiently moved.

$P^1$ and $P^2$ are horizontal rolls, carrying the scroll *g*, which is made of thin paper, and is colored in horizontal streaks, which are softly blended with each other. This colored scroll may be produced by hand, at small expense, and with much taste, or it may, by preference, be prepared by printing with lithography, or otherwise, so as to give brilliant and delicately-shaded streaks of color. Each streak may extend evenly across from one side to the other of the whole width of the scroll, and consequently nearly the whole width of the interior of the casing E. The rolls $P^1$ $P^2$ are turned at will by the projecting buttons $p^1$ $p^2$. As one is turned to roll up the screen thereon, the other is correspondingly turned to deliver the roll therefrom. The scroll is tinted in blue, yellow, white, and red, in single shades, or with a great variety of shades, and there are streaks of various shades of black. The effect of this latter part of the apparatus is to change the apparent effect of the views at will, either before the introduction of a new picture which seems to require it, or after a picture has been viewed in a different light. Thus, in viewing a landscape having the ordinary proportions of earth and sky, the tinted scroll *g* may be moved upward or downward, so as to give a uniform sombre or pale blue light to the whole scene. Then it may be moved downward so as to allow that light to fall upon the earth, while a mellow red light pervades the sky. Again, this may be moved downward, so as to make the tint uniform over the whole picture. And this may be again exchanged for a sunset or twilight scene, in which the earth is dark,

but the sky is mellow and warm. Fine effects are produced by properly mingling and exchanging the streaks of color by means of this movable roll, as arranged in this manner.

My scroll H, constructed and mounted as represented, is peculiarly favorable for this kind of exhibition, because it allows the entire view to be transparent. It is also very favorable to the presentation of panoramic views, or views succeeding each other, giving the whole of one side of a valley, or successive views along a coast, a street, or the like. The gear-wheels make it practicable to exchange the views with sufficient rapidity. It is tedious to turn the rolls directly to a sufficient extent, if the rolls are small; but an enlargement of the rolls to remedy this makes them occupy too large a space in the instrument. They will stop too much light, besides increasing the weight and generally deranging the usefulness of the instrument.

The elastic character of the upper bearings I I for the cylinders, and the ease with which the cylinders are fitted upon the shafts $J^1$ $J^2$, by simply fitting the squared or flattened end of one into a corresponding socket of the other, allows the rolls to be removed and exchanged with great facility. With proper care a large number of scrolls, H, each mounted on two corresponding cylinders, $G^1$ $G^2$, may be kept with the instrument, and each scroll H may contain twenty or more separate views.

Fig. 4. This represents a modification of my invention. The bellows-formed frame is dispensed with, and the arrangement of the part carrying the lenses is that generally known as the Holmes stereoscope.

From the frame which carries the lenses there extends a short partition, separating the spaces through which light from the photograph passes to the two eyes. S is a door, which is hinged at the top, and when the stereoscope is in use the lower edge of S rests upon the partition R. When the stereoscope is not in use the lenses and connected parts may be removed, and the door S brought down by the side of E, and secured. T is a door hinged at the bottom, and is adapted to drop down upon the tongue $A^2$ of the frame which carries the lenses. It serves the purpose of forming a floor to the spaces between the lenses B and photographs, and excludes the light from below. U is a cover of dark-colored thick cloth, rubber, or other material, which is impervious to light. This cover may be thrown loosely over the top of the stereoscope when in use, or may be temporarily secured by an elastic band passing around the main frame E, but is by preference permanently attached to the main frame E, and adapted to be folded inside of the frame E when not in use. Instead of the spring bearings $I^1$ $I^2$ for changing the rolls $G^1$ $G^2$, this figure represents a sliding frame, $I^3$, which carries the bearings of the upright rolls $G^1$ $G^2$. When it is desired to change the scroll H, and substitute another, the entire frame $I^3$, and its contents, are drawn up and removed, and another substituted. The same arrangement of gearing and short shafts and sockets may of course be used on this form of the construction as on that before described.

This modification of my invention possesses some advantages over that shown in figs. 1, 2, and 3. When the stereoscope is not in use, the shade A and its connected parts may be removed and put in a place of security from injury. By means of the doors S and T, the main chamber E, containing the scroll H and its connected parts, may be tightly shut up, so that the enclosed parts are protected from injury from dust and other causes. This modification has the additional advantage of being more conveniently transported.

The mortise E′ extends quite through the frame E. By inserting the tongue $A^2$, which carries the lenses B B, into the mortise E′, in the opposite direction from that represented, and arranging suitable supports at the lower side of the glass, *e*, in a line with the upper surface of the tongue $A^2$, photographs mounted in the ordinary way, and placed against the glass, *e*, may be viewed through the lenses. Thus, with the advantages above enumerated, I secure the additional benefit of providing an ordinary Holmes stereoscope without additional cost.

My stereoscope, in its several forms, is adapted to be used either with natural or artificial light; but I regard it peculiarly adapted for using artificial light, employing in such case a lamp, which may be placed on a stand in a proper position before the glass, *e*, or, by preference, on a platform not represented, which may extend out from the main frame, E, and support a lamp and suitable reflector.

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

1. I claim the rolls $P^1$ $P^2$ and the connected scroll Q, tinted substantially in the manner, and arranged to operate in combination with stereoscopic views, substantially as and for the purpose herein specified.

2. I claim arranging the scroll Q, to traverse diagonally so as to carry the tinted scroll nearer the picture at the top than at the bottom, while the rolls $P^1$ $P^2$ are equally near the picture, substantially as shown in fig. 4, for the purpose herein set forth.

3. I claim the vertical rollers $G^1$ $G^2$, carrying a series of transparent pictures joined as specified, in combination with a stereoscope, and arranged to operate the connected scroll H, substantially in the manner and for the purposes herein set forth.

4. I claim mounting the rollers $G^1$ $G^2$ and connected scroll H in frames $I^3$, adapted to be used in a stereoscope, substantially in the manner and for the purpose herein set forth.

5. I claim removing and exchanging the rolls $G^1$ $G^2$ and the connected scroll H, without disturbing the gearing, substantially as and for the purpose herein set forth.

In testimony whereof, I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN W. STORRS.

Witnesses:

D. L. FREEBORN,

FRANK A. HADICKE.