No. 671,111. Patented Apr. 2, 1901.

C. F. JENKINS.

STEREOSCOPIC MUTOSCOPE.

(Application filed Mar. 7, 1898.)

(No Model.)

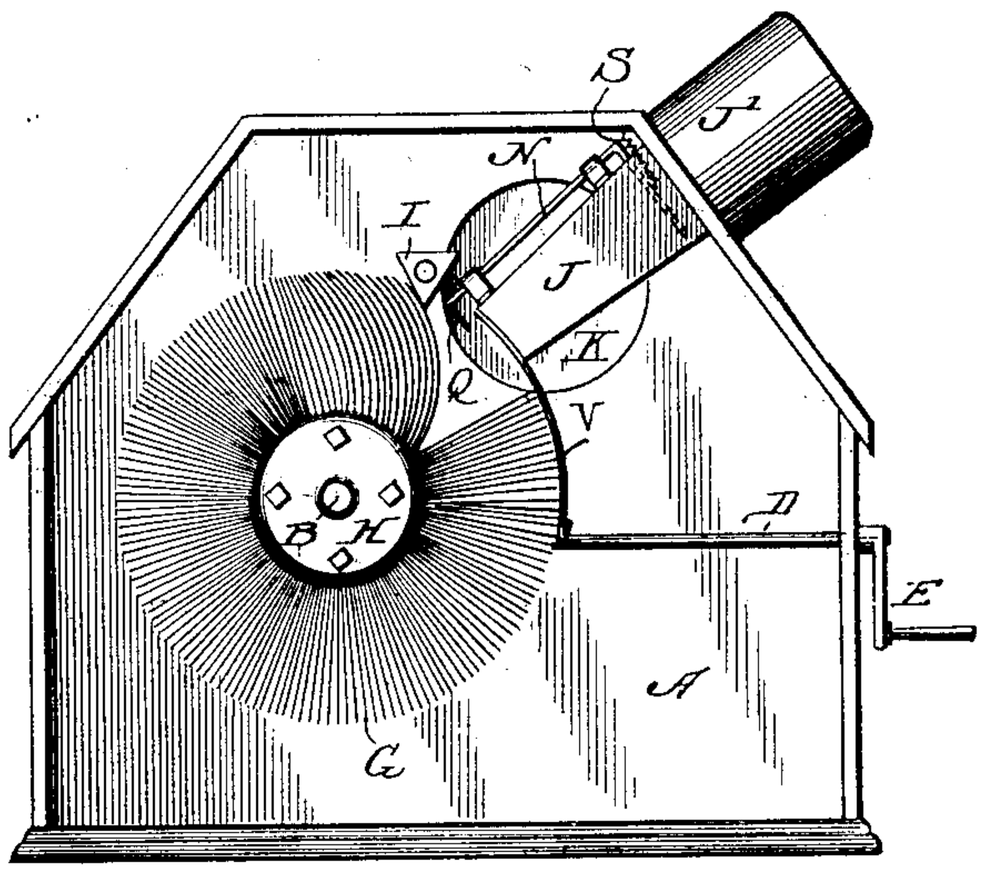


Fig. 1.

Fig. 2.

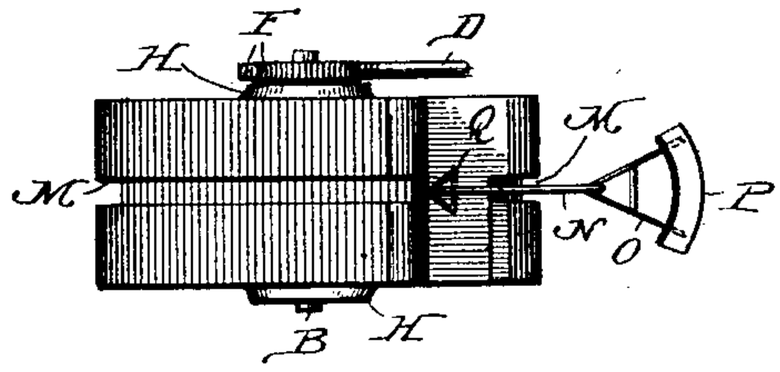


Fig. 3.

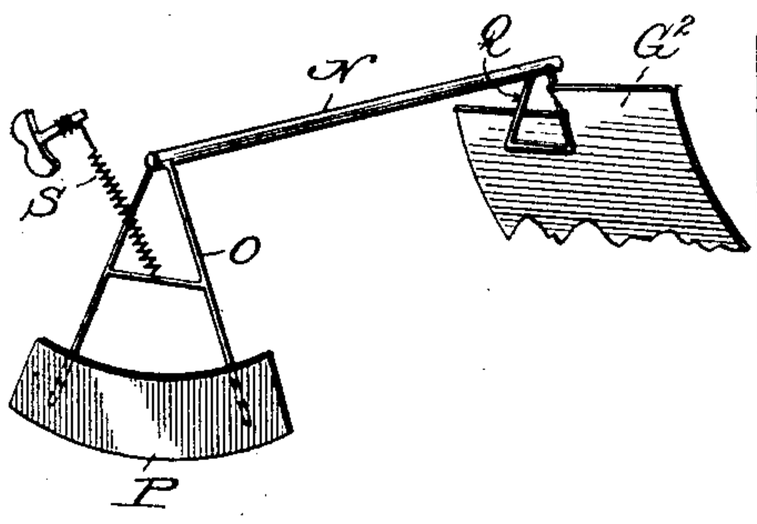
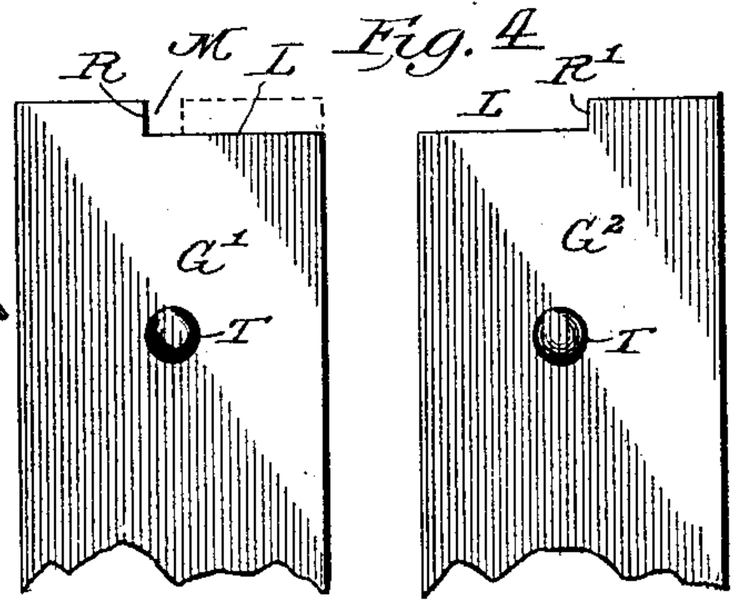


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES FRANCIS JENKINS, OF RICHMOND, INDIANA.

STEREOSCOPIC MUTOSCOPE.

SPECIFICATION forming part of Letters Patent No. 671,111, dated April 2, 1901.

Application filed March 7, 1898. Serial No. 672,930. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FRANCIS JENKINS, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Stereoscopic Mutoscopes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates particularly to devices whereby in the mutoscope series pictures show apparently-moving objects in stereoscopic relief. Stereoscopic pictures of the subject having been taken in rapid succession, the pictures of the two series—the right-eye series and the left-eye series—are made to alternate in the mutoscope, so that the pictures of the two series are presented alternately in rapid succession, the arrangement being such that during the instant that any single picture is visible the view from the eye for which that picture is intended is unobstructed, while the view from the other eye is cut off. The result is that all the pictures of the two series are unconsciously combined, and the observer perceives moving figures in substantially the same relief as if the actual objects, instead of pictures, were in the field of vision. It is well understood that in ordinary pictures showing objects not in motion, however perfect the shades and shadows, certain classes of objects appear flat and silhouette-like and that in such cases the common stereoscope offers material assistance. A far more striking advantage results from giving full relief to apparently-moving objects, for in this case the flatness is less readily overcome by the unconscious corrective powers of the observer and if not corrected is far more incongruous, and hence fatal to complete and pleasurable illusion.

In the drawings, Figure 1 is a side elevation of a common form of mutoscope provided with my devices, one side of the box or case being removed Fig. 2 shows in plan certain cards, a shutter, and means whereby the movement of the cards operates the shutter. Fig. 3 shows in perspective the shutter and a card in the act of operating the shutter. Fig. 4 shows the form of certain picture-bearing cards.

In the figures, A represents any suitable box or case, and in this are mounted horizontal shafts B D, the latter rotated by means of a crank E and imparting its movement to the former through worm and gear connections F. Upon the shaft B a large number of radial cards G are fixed between clamping-plates H, rotating with the shaft. The cards may be of any material affording ordinary resiliency, and no novelty is claimed for the material nor for the mounting upon the shaft, the mounting shown being such as has long been in common use. When the shaft and its cards are rotated, the free outer ends of the cards as they reach the upper part of their path are momentarily arrested by a fixed block I and held until by the continued rotation of the shaft they are bent backward so far that they slip from beneath the block and escape singly in rapid succession. On escaping each by its own elasticity springs suddenly forward to the position it would have occupied had it not been engaged by the block. Light is admitted to the box through suitable stereoscopic windows K, and a suitable tube J J′, provided with proper lenses (not shown) and of course with the partition extending forward from the lenses in all ordinary stereoscopes, is fixed in the box-wall in such position that one looking inward through the tube may see each picture during the instant preceding its escape from the block I. The inner end of the tube may, if desired, be fixed to any suitable support V, extending to any convenient part of the box. As shown, this support is cylindrically curved and has its ends fixed in the sides of the box, one of the sides being that seen beyond the moving mechanism in Fig. 1. On the successive cards right and left eye pictures alternate. Each card bearing a left-eye picture is cut away at its outer end to form an end margin L, extending parallel to the original end line, from one edge of the card to a point on the opposite side of the medial line, thereby shortening this part of the card and forming a shoulder R approximately parallel to the card's lateral margins. Each card G^2, bearing a right-eye picture, is similarly cut, except that

the opposite side of the card is shortened, leaving a shoulder R′, the result being that when two cards G′ G² are superposed in register the two shoulders form opposite sides of a notch M. Taken together the outer ends of the cards mounted on the shaft B appear, as seen in Fig. 2, like a short cylinder having a central circumferential groove.

Upon the tube J is mounted a rock-shaft N, nearly parallel to the line of sight and having at its upper and outer end an arm O, carrying a shutter P within the tube, and at its other end a shorter sector-like arm Q, projecting in the same direction. This end of the shaft projects slightly within the general surface of the card-cylinder in the plane of the groove, and the arm Q is so located that its divergent sides are struck alternately by the shoulders R R′ of the cards as the latter spring forward in succession on escaping from the block I, and by this means the shaft is rocked rapidly back and forth synchronously with the sudden forward movements of the successive cards, and thus the shutter, which is of proper length and form for the purpose, is swung back and forth, obstructing the vision of the eyes alternately. A light spring S connects the arm O to the box in such manner that its line of strain passes from one side of the shaft N to the other as the arm oscillates, and thus tends to hold the shaft at either limit of its angular movement. It is now evident that if the shutter be so set that any picture in view is seen by the eye for which it is intended the succeeding card as it is exposed by the escape of the first is seen by the other eye only, and so on indefinitely or as long as the shaft B is rotated.

The shaft N and its arms and shutter are all very light, so that they may be moved by very slight force and without acquiring material momentum, and the shutter itself is preferably translucent in order that it may cut off the image without cutting off the light.

Obviously it is immaterial, so far as my invention is concerned, whether the cards move about a fixed axis, and by "mutoscope" and "mutoscope class" as used herein I include all devices wherein series picture-cards are so arranged that the relative movement of one card exposes the next card of the series, and so on until all are exposed. It is also evident that the devices described may be varied without passing the proper bounds of my invention, and I do not therefore wish to limit myself to the precise construction set forth.

What I claim is—

1. The combination with a set of cards, each in front of and approximately parallel to the face of the next in its rear, bearing, respectively, the pictures of a right-eye series, of a similarly-arranged set of cards alternating with those of the first set and bearing, respectively, corresponding pictures of a left-eye series, means for holding the cards in position for exposing the most advanced, means for swinging the cards in succession out of the position in which each hides the next, and means for preventing each eye of the observer from seeing the pictures intended for the other eye.

2. The combination with a set of cards bearing, respectively, the pictures of a right-eye series, of an analogous set alternating with those of the first set and bearing, respectively, the pictures of a corresponding left-eye series, all the cards being arranged so that each covers the face of the next card in its rear, means for holding the cards in position for viewing the foremost, means for swinging this card, and those behind it, successively, out of position for hiding the succeeding card, and means for obstructing, alternately and synchronously with the exposure of the pictures, the views of the right and left eyes of the observer.

3. In apparatus of the class described, a set of cards bearing alternately, right-eye and left-eye pictures, the right-eye cards having portions of their margins, or projections therefrom, out of register with corresponding portions of the left-eye cards; whereby suitable devices may engage the cards of one series without engaging those of the other series.

4. In apparatus of the class described, the combination with a set of right-eye-series picture-cards alternating with corresponding left-eye picture-cards, of a shutter arranged for obstructing alternately the sight of the right and left eyes, and means whereby each released card in springing to its normal position shifts the position of the shutter, substantially as set forth.

5. The combination with alternating right-eye and left-eye series picture-cards cut substantially as set forth, of the shaft bearing the shutter, and the sector-like arm projecting from the shutter-shaft in position to be pushed alternately in opposite directions by the advancing cards.

In testimony whereof I affix my signature in presence of two witnesses.

C. FRANCIS JENKINS.

Witnesses:
HARRY S. ROHRER,
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