

(No Model.)

C. GOODYEAR, Jr.

ATTACHMENT FOR MAGIC LANTERNS OR STEREOPTICONS.

No. 543,009.

Patented July 23, 1895.

Fig. 1.

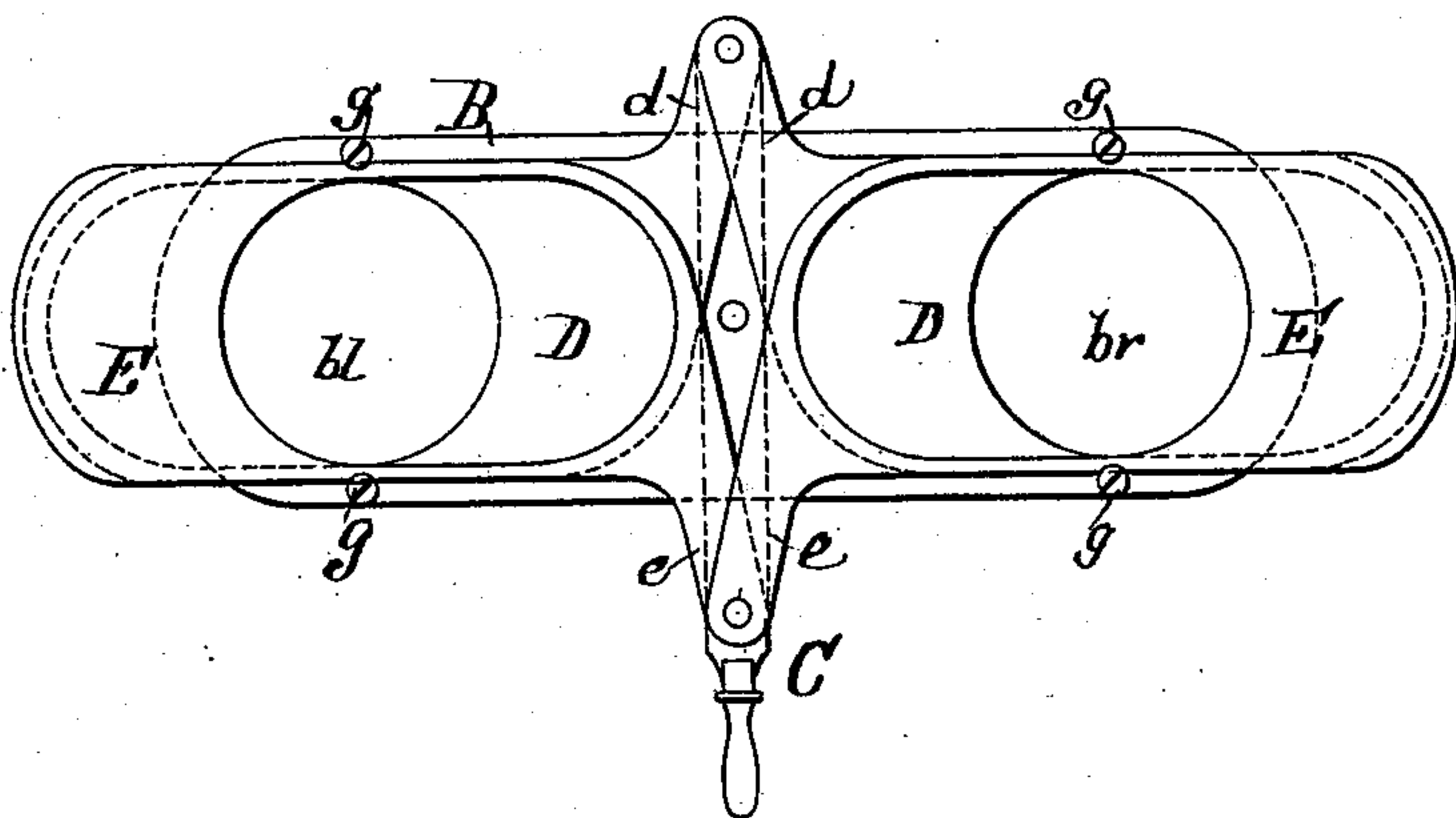


Fig. 2.

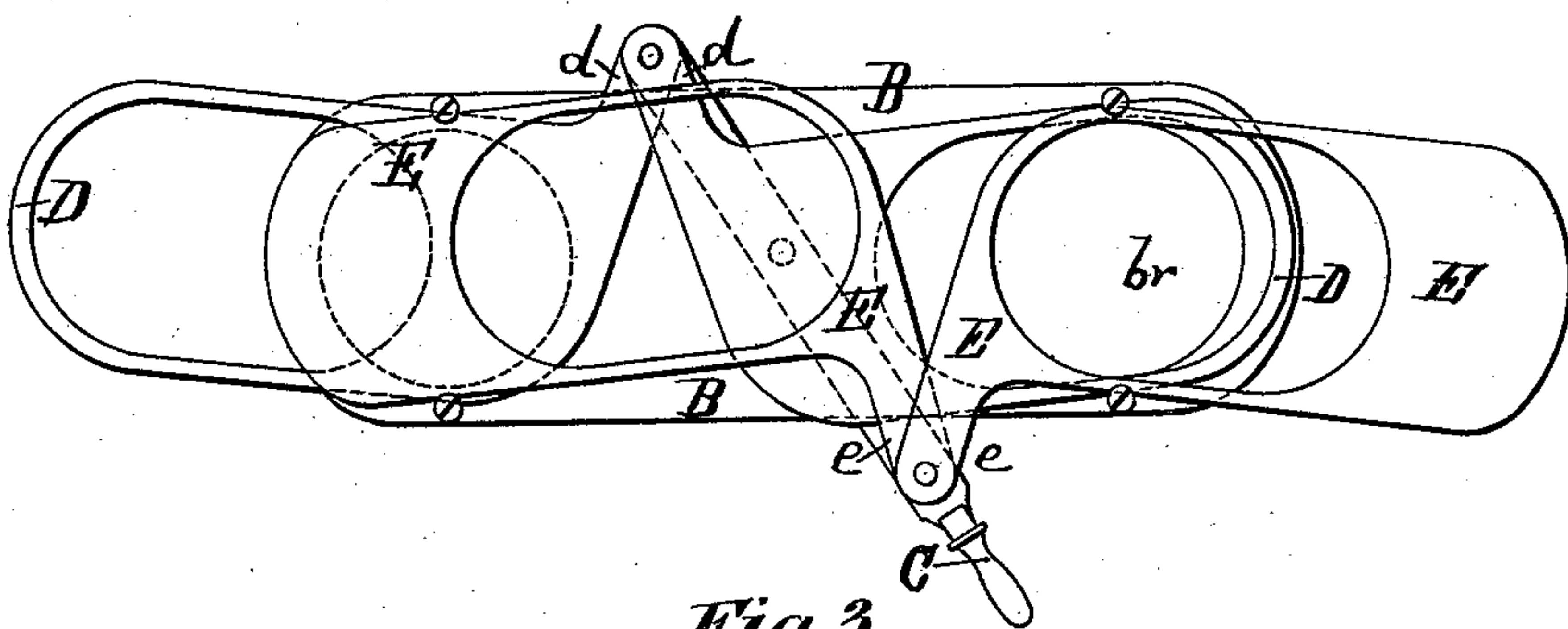


Fig. 3.

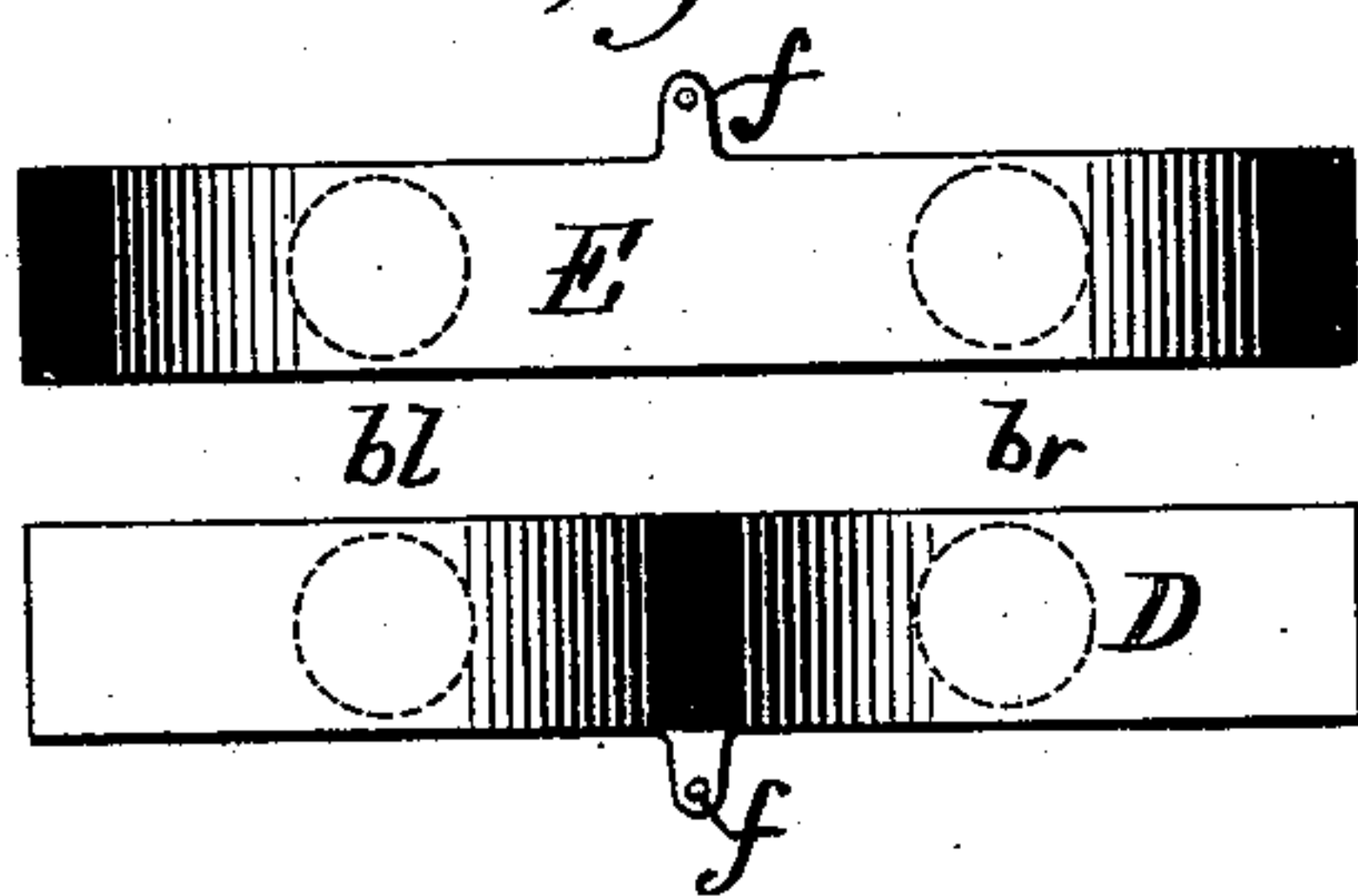
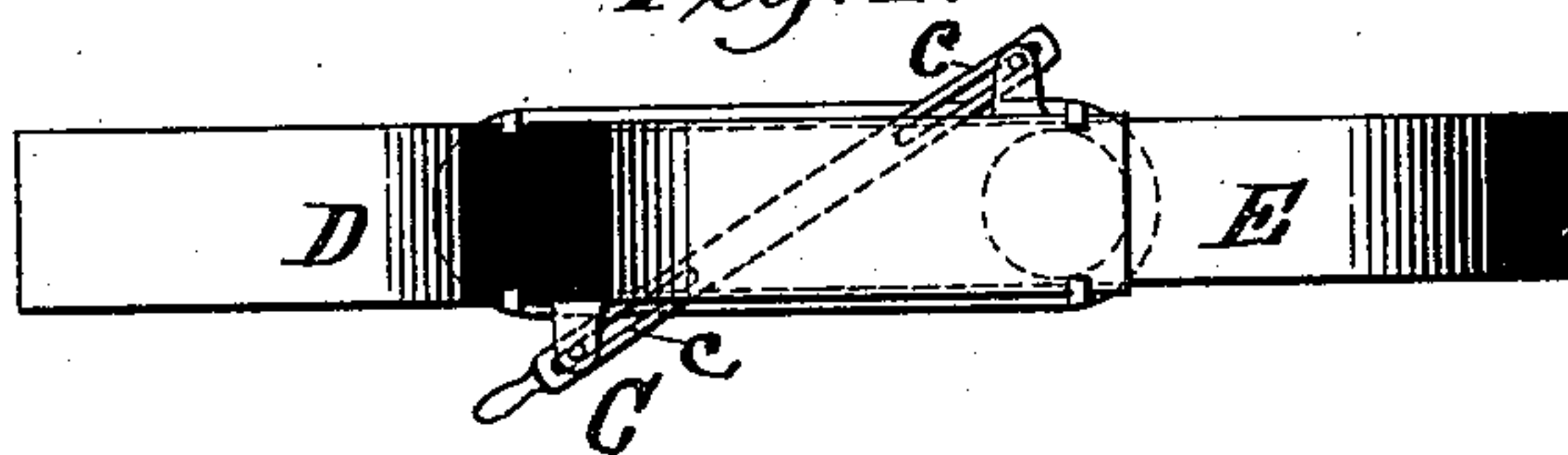


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

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ATTACHMENT FOR MAGIC LANTERNS OR STEREOPTICONS.

SPECIFICATION forming part of Letters Patent No. 543,009, dated July 23, 1895.

Application filed February 1, 1894. Serial No. 498,694. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GOODYEAR, Jr., of the city, county, and State of New York, have invented certain new and useful Improvements in Attachments for Magic Lanterns and Stereopticons, of which the following is a description, referring to the accompanying drawings, which form a part of this specification.

My invention in its broader aspect forms an improved shutter which may be used for almost all classes of magic lanterns, and in its most preferred form and use it is especially adapted for producing dissolving-view effects where two or more lanterns are used.

The purpose of my invention is to produce better and more perfect effects in the use of shutters and dissolving-view apparatus, and at the same time to provide such an attachment that shall be simple, inexpensive, durable, reliable, and easily operated.

To these and certain other ends and purposes, which will hereinafter more fully appear, my invention is embodied in the apparatus and its several parts, constructed, arranged, combined, and used substantially in the manner hereinafter described, illustrated, and claimed.

In the accompanying drawings, Figures 1 and 2 are face views of one form of my apparatus as designed for stereopticons. Fig. 3 shows a pair of improved sliding screens for use in my apparatus, and Fig. 4 a simple form of dissolving-view shutter provided with my improved sliding screens.

Throughout the drawings like letters of reference indicate like parts.

Figs. 1 and 2 illustrate a very effective form of dissolving-view attachment for use with lanterns having oil or calcium lights. Upon a support or back-plate B, having perforations or openings *br* and *bl*, corresponding to the right and left hand lantern of the stereopticon, I pivot at the center a hand-lever C. A pair of plates D E for each lantern are provided with arms or ears *de* and secured respectively to the oppositely-moving ends of the lever C, so that by throwing the lever the plates may move over each other in opposite directions to close or open the respective lanterns of the stereopticon. The plates D E are arranged symmetrically with respect to the support or

back-plate B, so that I will describe those only upon the right-hand side that form a shutter for the opening *br* of the right-hand lantern, letting it be understood that the left-hand plates correspond in all respects.

The plates D E are cut away, as shown, so that the opening *br* will be closed by moving the plate D and from the plate E toward the center of the lever C. This will take place when the handle of the lever is thrown to the left in the figure, the screw-studs *g* forming the guides for the movement of the plates D E. When, however, the handle of the lever is thrown toward the right, carrying the plate E with it and drawing the plate D to the left, the movement of the plates will not interfere with the opening *br*, but will leave the lantern open, as in Fig. 2. The left-hand plates, which form a shutter for the left-hand opening *bl*, corresponding with and operating in reverse direction to the right-hand plates, will be closed when the lever-handle is thrown to the right, as shown in Fig. 2. Therefore, when the lever is central, as in Fig. 1, both lanterns will be open, and when the lever is thrown to the right the left-hand lantern will be closed, and when the lever is thrown to the left the right-hand lantern will be closed.

I believe it is peculiar to my dissolving-view apparatus to have one lantern entirely open before the other begins to close. At all events, I am not aware that anyone heretofore has constructed a dissolving-view apparatus in which each lantern-shutter consisted of oppositely-moving plates or screens for cutting off the light arranged to keep the center of the opening during the action of closing and opening at all times at the axis of light of the lantern, and arranged to have one of the lanterns entirely open before the other begins to close. Very much better effects are produced by this combination than where, as has heretofore been customary, one lantern is partially obscured before the other is fully opened.

While I have found that metallic screens operating in this way work very satisfactorily with lanterns having a large area of light-giving surface—as, for instance, a lime light or oil light—where a more concentrated light—as, for instance, the electric-arc light—is used the definition of the shadow cast by the edges

of the screens is far too sharp to permit the gradual fading away of the image or picture cast. Metallic screens having deeply-indented edges similar to those used for vignetting sun-prints have been employed for the purpose of giving a gradually-diminishing amount of light over the whole picture; but with the electric-arc light I do not find this satisfactory, for the fingers or points of the screen so employed, notwithstanding any attempts at blurring by having them as far as possible out of focus, will cast a distinct shadow over the picture. I have therefore devised a new shutter screen or slide by which I am enabled to obtain an accurately-graduated reduction of the light during the action of closing and the reverse on opening. This screen consists of an opaque portion corresponding with the complete closure of the lantern, and an intermediate graduated portion of paint, pigment, or other opaque substance applied in a gradually-decreasing thickness, and thereby effecting a gradually-diminishing opacity. When a single screen of this character is used for closing a lantern the light is gradually cut off as the increasing thickness of the screen intervenes, there being little noticeable difference in brightness between the two sides of the image cast, although of course more light, strictly speaking, is cut off on one side, where the pigment is somewhat thicker, while the screen is moving across. Where, however, I employ double screens in my shutters and moving in opposite directions, as already described in connection with Figs. 1 and 2, even this slight objection, if indeed it be regarded as a material objection, is eliminated, and an absolutely uniform amount of light may be obtained over the entire picture, varying from maximum when the shutter is open to the moment when all light is shut off by the entirely opaque portions of the moving screens.

Fig. 3 illustrates a pair of screens for use with a stereopticon. These are lettered, as in Figs. 1 and 2, D E. The right and left hand portions, which in Figs. 1 and 2 form distinct plates, are here formed of a single glass plate, and therefore, when mounted, as in Fig. 4, the operating-lever C is provided with slots *c*, within which the pins *f* of the screens travel. The screens or plates D E may be formed of glass with the paint, pigment, or other opaque substance applied directly to the face of each plate. Preferably, however, the plates are formed of metal for the opaque portions, on account of the intense heat generated, and the graduated portions may be formed of thin mica. In such a construction the clear transparent portion of the plate may be entirely absent, as there will be no appreciable image cast by the thin edge of the mica and as mica at best cuts off some light.

In Fig. 4 the left-hand lantern is shown closed, the right-hand lantern open. It will be seen that the opaque portions at the cen-

ter of the screen D and at the left of the screen E have been brought together in front of the left-hand-lantern opening *bl*, while the semi-translucent portions of the plates are in front of the opening *br*. When the lever is brought to its central position, both lanterns will be open, as is clearly shown in Fig. 3. When the lever is thrown to the right, the right-hand lantern will be closed and the left-hand opened. When the semi-transparent or graduated portions of the screens are moving across the lantern, it is clear that the denser part of one plate corresponds with the thinner part of the graduated portion of the other plate, and as a result a very even distribution of light over the opening is had. As the plates are moved farther and the entirely opaque portions approach, the light gradually fades away until it entirely disappears. On opening the light increases at an almost uniform rate in the same manner over the whole image or picture cast, giving an effect which I believe has not been heretofore possible where the electric-arc light has been employed in stereopticons.

I have now described my invention in its adaptation to a dissolving-view attachment for stereopticons. In its broader aspect the principle of my apparatus may be employed in a shutter for a single magic lantern—that is to say, the graduated screens may be employed to great advantage. I have, however, fully set forth my invention in one embodiment, and shown the manner in which it may be employed.

I have purposely omitted the enumeration of minor details and of many modifications that may be made without departing from the principles involved, because to set these forth at length would obscure rather than make clear the more essential features of my invention.

I claim, however, and desire to secure by these Letters Patents, together with all such modifications as may be made by mere mechanical skill, and with only such limitations as are expressed or necessarily implied, the following:

1. In the stereopticon attachment, for simultaneously opening one lantern and closing the other, a plate or other carrier provided with two semi-transparent portions of graduated opacity reversely placed at a distance corresponding to the distance between the axes of the lantern, whereby the movement of the said plate or carrier in either direction may simultaneously and gradually open one lantern and close the other whereby dissolving view, color changes, and other effects may be produced, substantially as set forth.

2. In the stereopticon attachment, for simultaneously opening one lantern and closing the other, a pair of screens D therefor each having an opaque portion and a semi-transparent portion reversely placed upon each of the screens or slides and also reversely placed as regards the co-operating portions on

the two slides, for each lantern, whereby the movement of the two slides or screens will cause the gradual diminution of light, substantially uniformly, over one entire picture 5 and the gradual increase substantially uniformly over the other picture, substantially as set forth.

3. In combination in a dissolving view attachment for stereopticons, two or more oppositely-moving and cooperating screens or 10 plates, an operating lever therefor, and pivotal or other connections between the said

lever and the said screens or plates, the said screens or plates being so arranged that each lantern of the said stereopticon will be opened 15 by the movement of the lever, before the other lantern begins to close, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand this 23d day of January, 1894.

CHARLES GOODYEAR, JR.

Witnesses:

GEO. H. SONNEBORN,
HAROLD BINNEY.