

No. 636,500.

Patented Nov. 7, 1899.

W. K. L. DICKSON.
CONSECUTIVE VIEW APPARATUS.

(Application filed Sept. 27, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1,

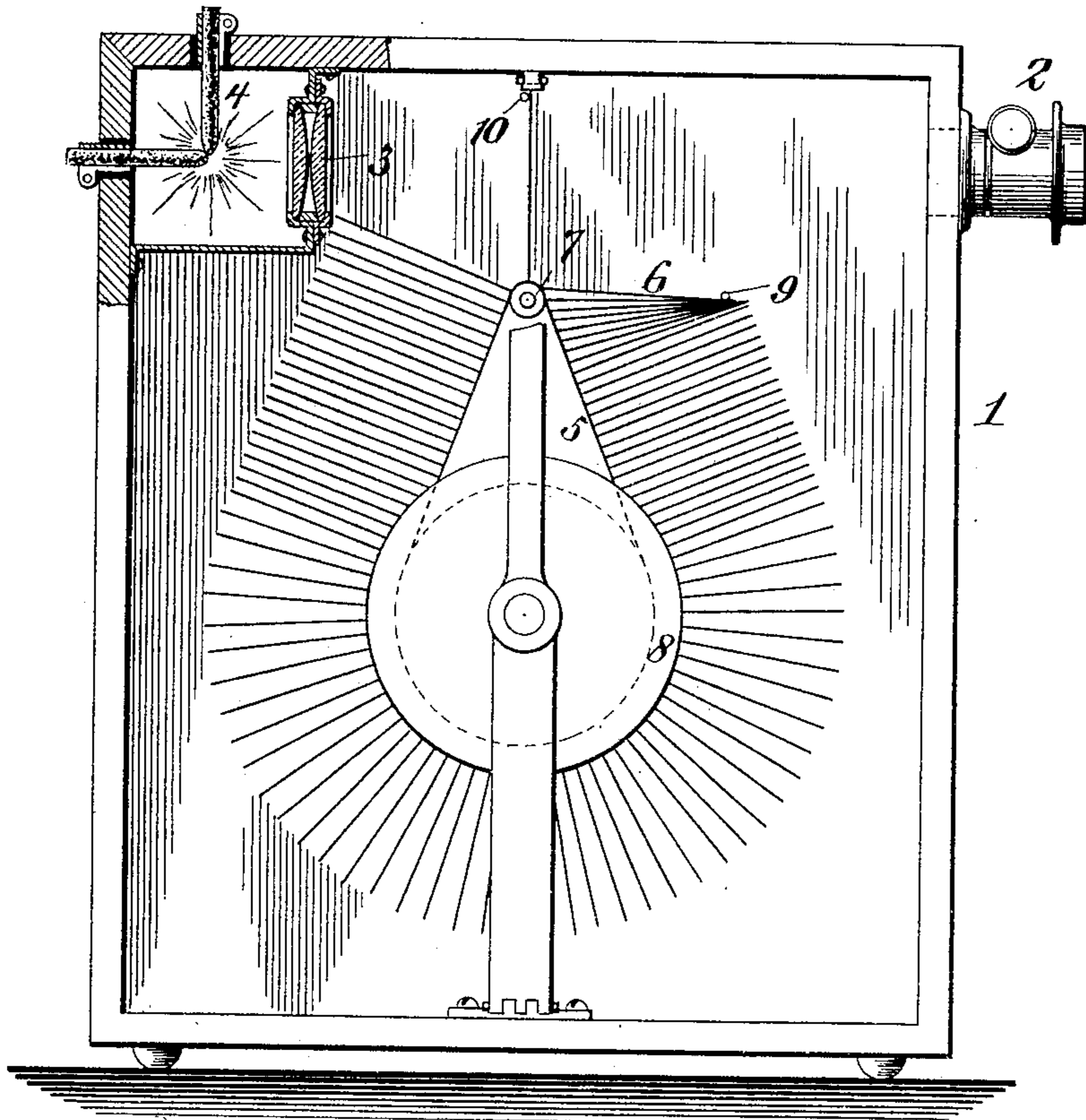
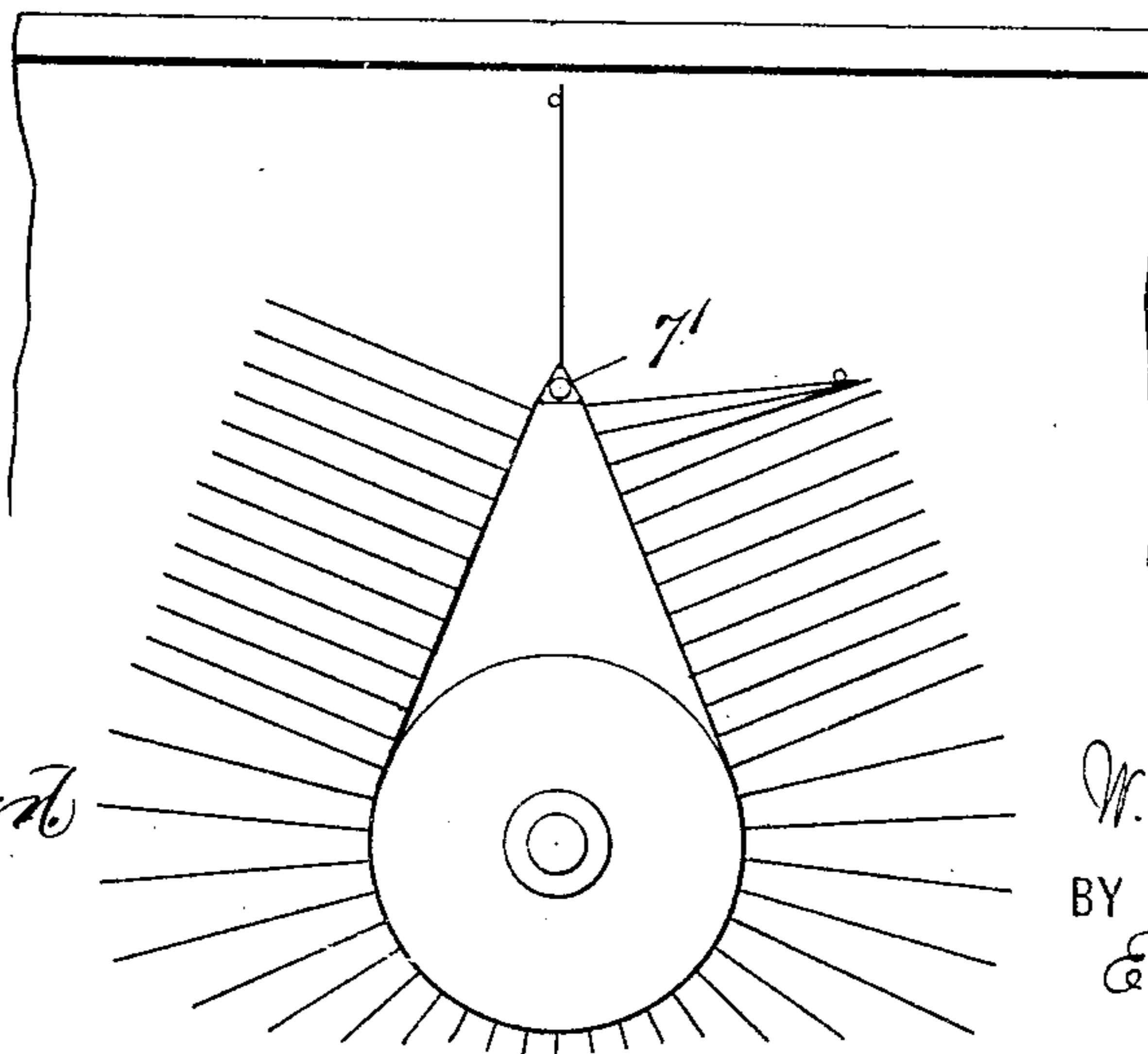


Fig. 2,



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Fig. 3,

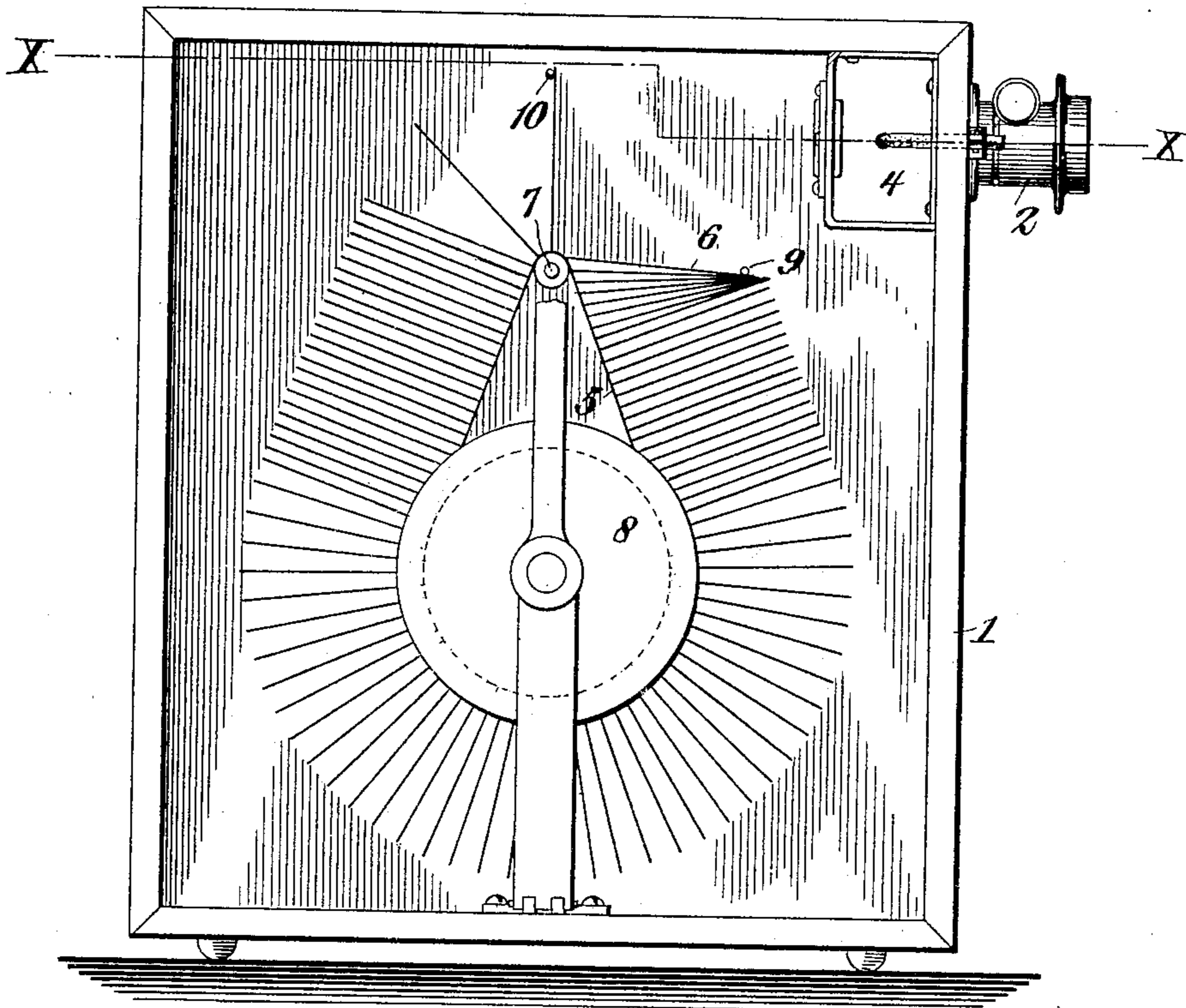
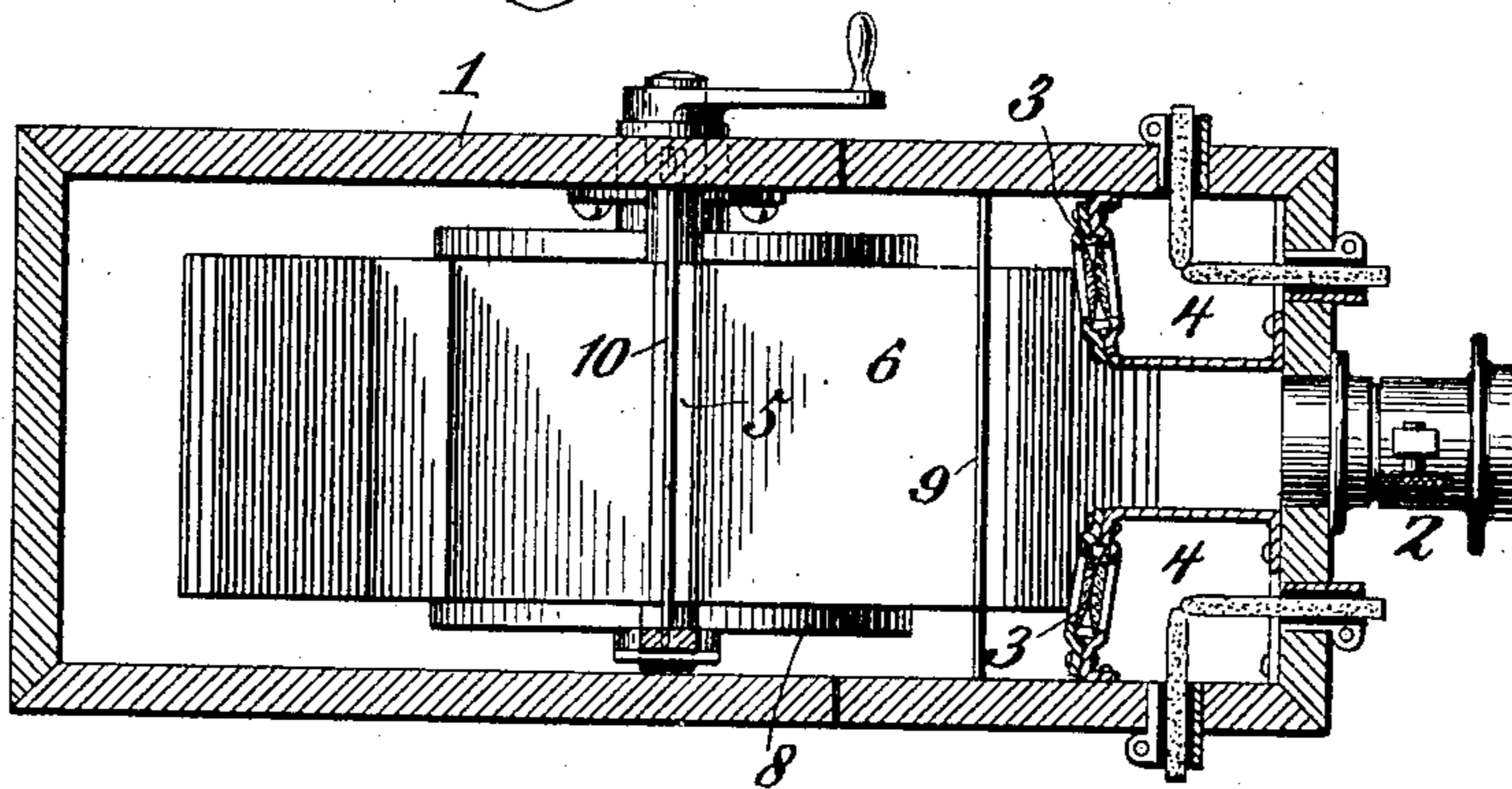


Fig. 4,



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UNITED STATES PATENT OFFICE.

WILLIAM KENNEDY LAURIE DICKSON, OF NEW YORK, N. Y., ASSIGNOR
TO THE AMERICAN MUTOSCOPE AND BIOGRAPH COMPANY, OF SAME
PLACE.

CONSECUTIVE-VIEW APPARATUS.

SPECIFICATION forming part of Letters Patent No. 636,500, dated November 7, 1899.

Application filed September 27, 1897. Serial No. 653,282. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KENNEDY LAURIE DICKSON, a subject of the Queen of England, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Consecutive-View Apparatus; 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 to consecutive-view apparatus, and particularly to consecutive-view apparatus of the type of the mutoscope covered by Letters Patent No. 549,309, dated November 5, 1895, and issued to Herman Casler.

My invention consists in the novel means employed for passing a succession of cards through the field of the apparatus and holding each card stationary when in said field and in the novel combination, construction, and arrangement of the parts.

The objects of my invention are, first, to improve the construction of that class of consecutive-view apparatus which employ a succession of cards mounted upon a movable carrier by providing means for holding each card as it passes through the field of the apparatus stationary therein for a brief instant in a position at right angles to the optical axis and for holding the other cards during this period of exposure out of this field; second, to provide a simple form of consecutive-view apparatus especially adapted for use as a projecting apparatus and which is simpler, more compact, and more easily operated than former projecting consecutive-view apparatus, and, third, to make the apparatus simple, compact, durable, and inexpensive.

These objects are attained in the invention herein described, and illustrated in the drawings which accompany and form a part of this specification, in which the same reference-numerals indicate the same or corresponding parts.

In the drawings I have shown my invention as applied to a projecting apparatus. It is for use as a projecting apparatus that my invention is particularly intended, though it

may also be employed as a direct-vision apparatus or in a camera. In most projecting consecutive-view apparatus heretofore devised the pictures have been upon a long band or strip of flexible photographic film, which is moved at a high speed through the field of the apparatus, being wound from a supply-spool upon a receiving-spool and being moved intermittently through the field of the apparatus, each view being stationary in said field for a brief instant while it is exposed. The mechanism for handling the film strip and for moving it intermittently in this manner is necessarily somewhat complicated, and if pictures of a size adapted to give the best results are used or if the film is fed through the apparatus at the speed required to give the best results considerable power is required to drive this film-handling mechanism. The herein illustrated and described consecutive-view apparatus is capable of employing as large pictures as can be employed in any film-strip apparatus and of passing these pictures through the field of the apparatus as rapidly as can be done in any film-strip apparatus and is far simpler and less expensive, besides requiring less power in operation.

The invention consists in mounting a succession of view-carriers, which may be transparencies, upon a movable carrier arranged to pass these carriers or cards successively through the field of the apparatus and in providing stops for engaging these cards successively, one stop being so placed as to hold each card as it passes through the field of the apparatus stationary at right angles to the optical axis and the other stop being so placed as to permit only one card or picture carrier to be in the field of the apparatus at any one time.

In the drawings, Figure 1 is an elevation and partial section of a consecutive-view projecting apparatus constructed in accordance with my invention in which the light is projected through the views, which are transparencies. Fig. 2 is a similar detail view illustrating a modified construction of the view-feeding mechanism. Fig. 3 is an elevation of a projecting apparatus constructed in accordance with my invention in which the

light is reflected from the views through the objective, and Fig. 4 is a horizontal section of this machine through the line xx of Fig. 3

In the drawings, 1 is an inclosing case.

5 2 is an objective lens.

3 is a condensing-lens, and 4 is a source of light.

5 is a belt or band upon which are mounted a series of picture carriers or cards 6. The
10 belt 5 runs over two pulleys, one, 7, in the field of the apparatus, which field lies between the condensing and objective lenses, and the other, 8, which is beneath or to one side of the pulley 7 and is the driving-pulley. It
15 may be rotated by any suitable means.

The picture-cards 6 for the form of apparatus shown in Fig. 1 may be formed of transparent celluloid, such as is used for what are known as "cut" photographic films or of any
20 other resilient material which is sufficiently transparent to permit the projection through it of pictures. For the form of apparatus shown in Fig. 3, in which the light is reflected from the faces of the cards, these cards
25 may be formed of cardboard or other resilient material. The cards are secured rigidly at their inner ends to the belt or band 5, but are free at their outer ends.

9 and 10 are stops which engage the outer
30 edges of the cards and retard their passage. 9 is so placed as to hold the cards out of the field of view until the cards bend and so slip by the stop or detent. 10 is so placed as to hold each card stationary for an instant in
35 the field of the apparatus and at substantially right angles to the optical axis. The cards being successively moved through and held stationary for a brief instant in the field of the apparatus are in position for the pas-
40 sage of rays of light through them and the projection of the pictures which they carry by the objective lens upon the screen.

The operation of my invention is as follows: The pulley 8 being rotated so as to drive the
45 belt or band 5, the picture-cards 6 are successively moved past the stop 9 into the field of the apparatus, then past the stop 10, and out of said field. Each card is held stationary for an instant by each stop and does not
50 move past said stop until by the forward movement of the band 5 the card has been bent to such an extent that when it slips by the detent it will spring forward with considerable velocity against the detent 10, by which it is
55 held until in a similar manner it springs forward past the detent 10 and out of the field of view. In this way the cards successively pass through the field of view and the pictures which they carry are successively thrown
60 upon the screen. The cards may be passed through the field of view successively in this manner with any desired speed and with such speed that the successive views upon the screen become blended to the eye and produce
65 to the eye the appearance of motion.

The cards may be secured to the belt 5 in

any suitable manner. Instead of being secured rigidly, as above described, they may have any other connection which will cause them to spring forward rapidly after they have
70 passed the stops 9 and 10—such, for instance, as a spring-hinge connection.

I do not limit my invention to the use of a flexible band or belt as a carrier for the cards. Any other suitable carrier may be used.
75 Neither is my invention limited to use in projecting apparatus simply. If instead of the lens 2 there be a simple observation-opening in the case 1, the apparatus may be used as a direct-vision-reproducing apparatus with or
80 without a source of illumination 4. If the cards 6 have light sensitive surfaces, the apparatus may be used as a camera. The invention therefore is applicable to consecutive-view apparatus generally and not simply to
85 consecutive-view projecting apparatus. In this type of apparatus no shutter is necessary. Preferably the upper guide-roller 7 is of small diameter, as this tends to produce separation of the picture-cards while passing around the
90 belt. Instead of a pulley 7 a wedge-shaped block 7', Fig. 2, may be used, having its corners rounded, so that the belt may be pulled around it. This is a guide for the belt equivalent to the pulley 7. Instead of causing the light to
95 pass through the picture-cards, as shown in Fig. 1, the apparatus may be arranged to project by reflection, as shown in Figs. 3 and 4, the light being projected upon these cards from lamps 4 at the sides. This light is re-
100 flected by the picture-cards into the objective lens and is projected thereby upon this screen.

Having thus completely described my invention, what I claim, and desire to secure by
105 Letters Patent, is—

1. In a consecutive-view apparatus, the combination, with a case having an opening through which views may be projected or observed, a carrier movably mounted within said
110 case, and means for operating the carrier, of a series of picture-cards mounted upon and secured at one end to said carrier, and detents adapted to engage the outer ends of said cards and momentarily retard them, one detent being
115 arranged to hold said cards backward just prior to their passage into the field of the apparatus, and another being arranged to hold each card stationary momentarily in said field, substantially as described.
120

2. In a consecutive-view apparatus, the combination, with a case having an opening through which views may be projected or observed, a carrier movably mounted within said
125 case, and means for driving the carrier, of a series of flexible and resilient picture-cards mounted upon and rigidly secured at one end to said carrier, and detents adapted to engage the outer ends of said cards and momentarily retard them, one detent being arranged to
130 hold said cards backward just prior to their passage into the field of the apparatus, and

another being arranged to hold each card stationary momentarily in said field, substantially as described.

3. In a consecutive-view apparatus, the combination, with a case having an opening through which views may be projected or observed, a flexible band or belt movably mounted within said case, guides for said band or belt, means for driving the same, and a series of picture-cards mounted upon and secured at one end to said band or belt, of detents adapted to engage the outer ends of said cards and momentarily retard them, one detent being arranged to hold said cards backward just prior to their passage into the field of the apparatus, and another being arranged to hold each card stationary momentarily in said field, substantially as described.

4. In a consecutive-view apparatus, the combination, with a case having an opening through which views may be projected or observed, a flexible band or belt movably mounted within said case, a driving-pulley over which said belt passes and by which it may be driven, another guide for said belt of small width and in close proximity to the field of view, and means for rotating said driving-pulley, of a series of picture-cards mounted upon and secured at one end to said carrier, and detents adapted to engage the outer ends of said cards and momentarily retard them, one detent being arranged to hold said cards backward just prior to their passage into the field of the apparatus, and another being arranged to hold each card stationary momentarily in said field, substantially as described.

5. In a consecutive-view apparatus, the combination, with the lens and illuminating apparatus of a projecting apparatus, and a carrier movably mounted and means for driving the same, of a series of picture-cards mounted upon and secured at one end to said carrier, and detents adapted to engage the outer ends of said cards and momentarily retard them, one detent being arranged to hold said cards backward just prior to their passage into the field of the apparatus, and another being arranged to hold each card stationary momentarily in said field, substantially as described.

6. In a consecutive-view apparatus, the combination, with condensing and objective lenses and a source of illumination, of a carrier movably mounted and means for driving the same, a series of picture-cards mounted upon and secured at one end to said carrier, said carrier being arranged to pass said cards between the condensing and objective lenses, and detents adapted to engage the outer ends of said cards and momentarily retard them, one detent being arranged to hold said cards backward just prior to their passage through the field of the apparatus, and another being arranged to hold each card stationary momentarily in said field and at right angles to the optical axis, substantially as described.

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

WILLIAM KENNEDY LAURIE DICKSON.

Witnesses:

ELIAS B. KOOPMAN,
E. SHOULS.