W. M. FISCHBACH.

STEREOPTICON.

APPLICATION FILED JULY 1, 1914.

1,142,158.

Patented June 8, 1915.

4 SHEETS—SHEET 1.

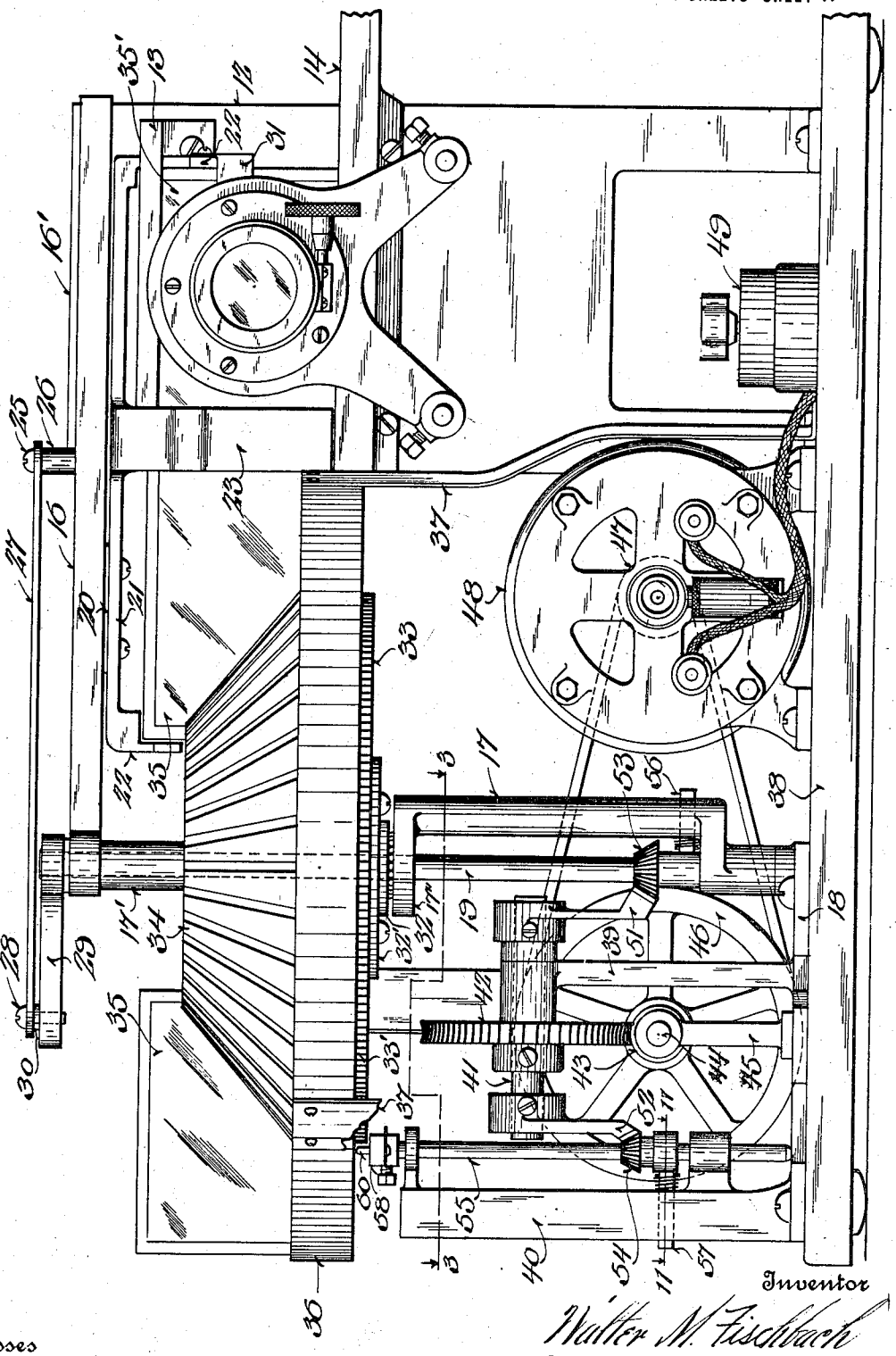


Fig. 1.

Witnesses

J. A. Otto.

May Downey.

Inventor

Walter M. Fischbach

By Christy & Young

Attorneys

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4 SHEETS—SHEET 2.

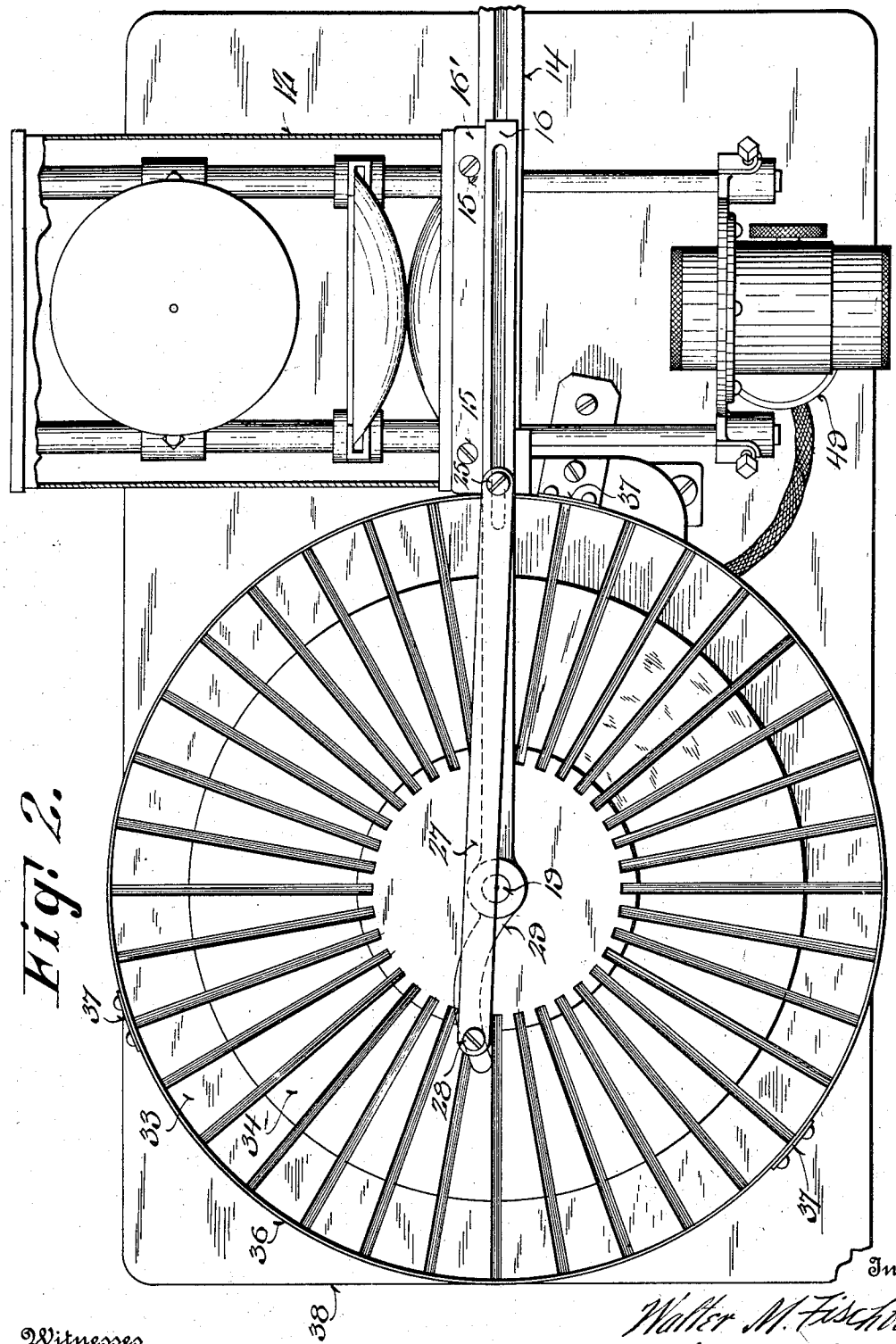


Fig. 2.

Witnesses

Paul Otto

May Downey

Inventor

Walter M. Fischbach

By Dyrenforth & Young

Attorneys

W. M. FISCHBACH.

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4 SHEETS—SHEET 3.

Fig. 3.

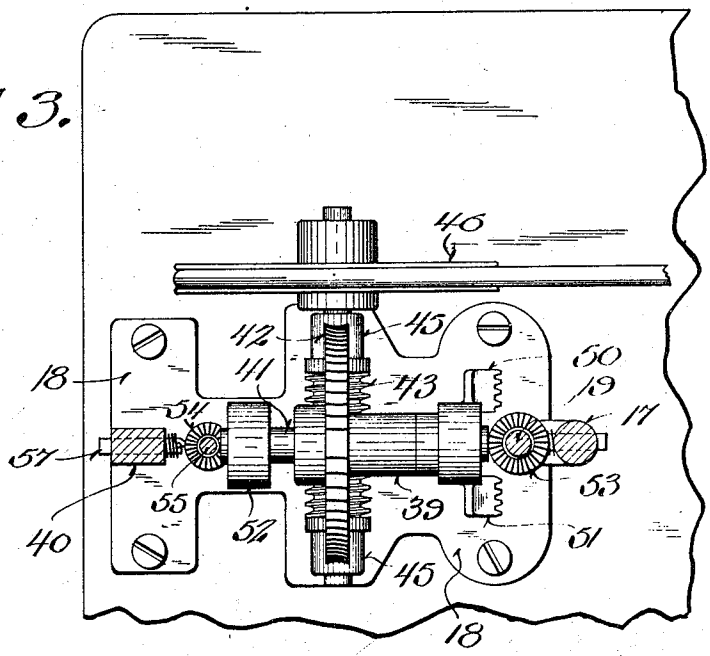
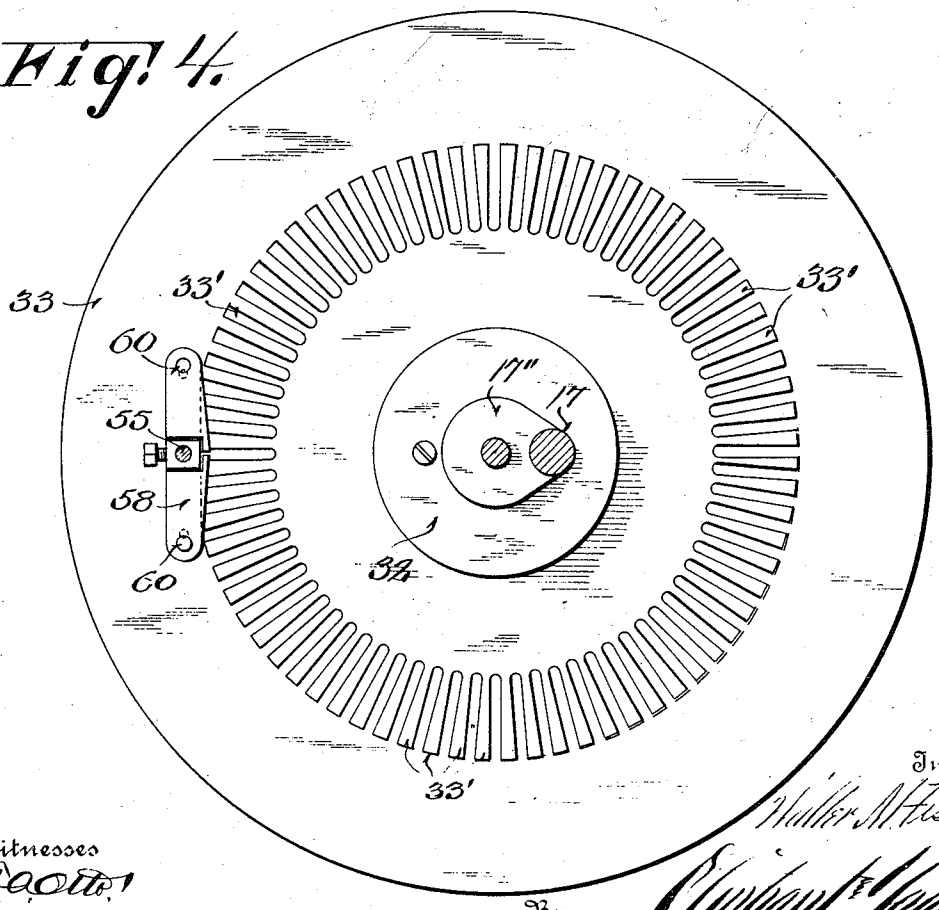


Fig. 4.



Witnesses

Jacob

May Downey

Inventor

Walter M. Fischbach

By Lyon & Young.

Attorneys

W. M. FISCHBACH.

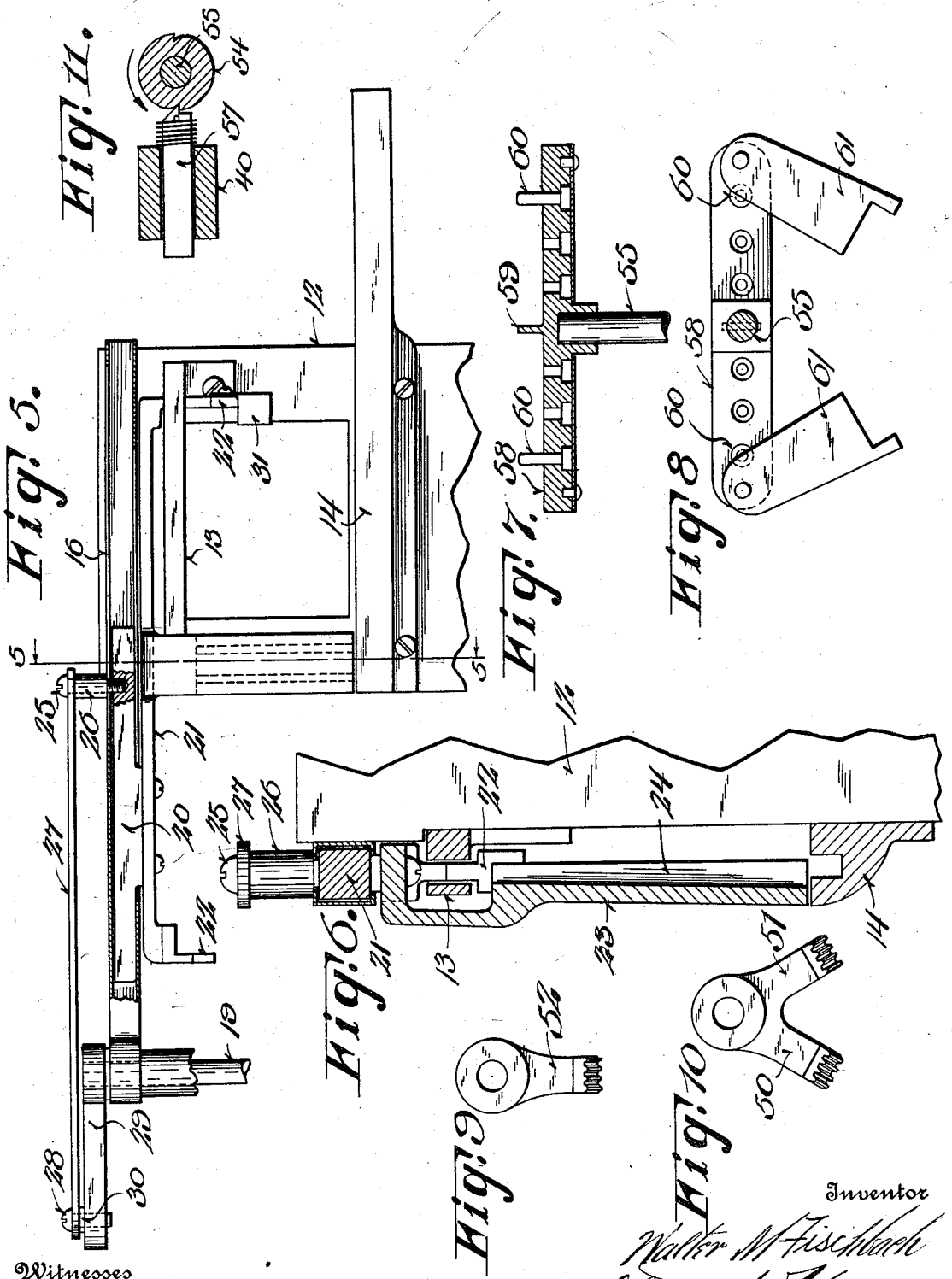
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4 SHEETS—SHEET 4.



Witnesses

Jacob!

May Downey

Inventor

Walter M. Fischbach

By Wyman & Young

Attorneys

UNITED STATES PATENT OFFICE.

WALTER M. FISCHBACH, OF MILWAUKEE, WISCONSIN.

STEREOPTICON.

1,142,158. Specification of Letters Patent. Patented June 8, 1915.

Application filed July 1, 1914. Serial No. 848,513.

To all whom it may concern:

Be it known that I, WALTER M. FISCHBACH, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Stereopticons; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists in what is herein particularly set forth with reference to the accompanying drawings and pointed out in the claims of this specification, its object being to provide stereopticons with simple, economical and efficient automatic slide changing apparatus embodying a carrier in which the slides are readily accessible.

Figure 1 of the drawings represents a front elevation of a stereopticon and an automatic slide changing apparatus therewith in accordance with my invention; Fig. 2, a plan view of the same, the lantern of the stereopticon being partly in horizontal section; Fig. 3, a plan view of a fragment of the slide-changing apparatus partly in horizontal section, the view being indicated by line 3—3 in Fig. 1; Fig. 4, a plan view of a rotary carrier element of said apparatus and parts therewith inverted; Fig. 5, a front elevation of a fragment of said apparatus partly in section, and in connection with the stereopticon; Fig. 6, a cross-section view indicated by line 5—5 in Fig. 5; Fig. 7, a sectional view of a crosshead element of said apparatus; Fig. 8, a plan view of the crosshead inverted and having pivotal plates therewith swung out of normal position; Figs. 9 and 10, side elevations of gear-arms of said apparatus, and Fig. 11, a sectional view of a detail of said apparatus, the same being indicated by line 11—11 in Fig. 1.

Referring by numerals to the drawings, 12 indicates a stereopticon lantern having the front thereof provided with upper and lower slide-guides 13, 14, the lower guide being shown extended in one direction beyond said lantern.

Fastened to the front frame of the lantern, by screws 15 or otherwise, is a rear upper horizontal flange 16′ of a guide-bar 16 having an end thereof supported on a post-extension 17′ of a standard 17 that is rigid on a base-plate 18, said post-extension and the lower end of the standard serving as bearings for a vertical shaft 19.

Reciprocative in the guide-bar 16 is a head 20 of a traveler that also embodies a bar 21 having depending end fingers 22 and an intermediate depending web 23 that is fashioned to clear the upper slide-guide 13 of the lantern and provided with an inner stop-rib 24. Coupled to the traveler-head, by a screw 25 extending through a spacing-sleeve 26, is one end of a pitman 27, and the other end of the pitman is coupled, by a screw or pin 28, to a crank 29 fast on the upper end of the shaft 19, a spacing-washer 30 being arranged on said screw or pin between said pitman and crank. Each finger 22 of the traveler is provided with a right-angle notch matching an upper corner of a lantern slide or shutter movable in the guides aforesaid, and one of said fingers is shown provided with a clamp 31 that grips upon a permanent lantern-slide or shutter 35′ for which the lower guide 14 on the lantern is extended as aforesaid.

Loose on the post-extension 17′ of the standard 17 is a hub 32 having ball-bearing on a shoulder 17″ of said standard, and fastened to a flange 32′ of the hub is a horizontal circular plate 33 having its upper side provided with a series of regularly spaced radial grooves, and the underside of the plate is provided with a corresponding series of grooves between radial ribs 33′ thereof. Centered on the plate 33, rigid therewith, is a hollow conical crown 34, having a base of less diameter than said plate. The wall of the crown is provided at regular intervals with slots that communicate with the upper grooves of the plate 33.

The plate 33 and conical crown 34 therewith constitute a carrier for lantern-slides 35, that are set upright in the upper grooves of said plate and the slots of said crown that match said grooves.

Surrounding the plate 33 of the slide-carrier and rising above the same is a guard 36 for the lantern-slides, said guard being open to the mouth of the lower slide-guide 14 of the lantern. The guard 36 is attached

to legs 37 fastened to a base 38 upon which the lantern and the plate 18 aforesaid are mounted.

The base-plate 18 is provided with other standards 39 and 40. A horizontal arbor 41 has its bearing in the upper end of the standard 39 and a worm-wheel 42, fast on the arbor, is in mesh with a worm 43 fast on a shaft 44 for which the plate 18 is provided with bearing standards 45, and a pulley 46 fast on said shaft is in belt connection with another pulley 47 fast on the shaft of an electric-motor 48 that is mounted on the base 38, the current supply to the motor being controlled by a switch 49 in the motor circuit.

Fast on one end of the arbor is the hub of gear-arms 50, 51, and fast on the other end of said arbor is the hub of a single gear-arm 52. The gear-arms 50, 51, act successively upon a bevel-gear pinion 53 fast on the vertical shaft 19 to effect a reciprocation of the traveler aforesaid, and the gear-arm 52 acts upon a bevel-gear-pinion 54 fast on another vertical shaft 55, for which the standard 40 is provided with bearings. The disposition of the gear-arms is such that the one 52 has action in the interval between the action of the others 50 and 51, whereby when either of the vertical shafts 19, 55, is in motion, the other is at rest, and each of said gear-arms is timed to impart a one-half revolution to the relative pinion.

Reciprocative in the standards 17 and 40 are spring-controlled latches 56, 57, respectively. The latch 56 is for alternate engagement with diametrically opposite notches in the hub of the pinion 53, and the latch 57 is for alternate engagement with diametrically opposite notches in the hub of the pinion 54, said latches serving as stops to prevent overrunning of the shafts 19 and 55.

Centrally secured on the upper end of the shaft 55, rigid therewith, is a crosshead 58 provided with an upper central fin 59 transversely thereof, and the cross head is also provided with suitably spaced countersunk apertures in series in opposite directions from said fin. Extending through an aperture of each series in the crosshead is a pin 60, and the two pins are always to be set equi-distant from the axial center of said crosshead, said pins being held in their adjusted positions by supporting plates 61 pivoted to the underside of said crosshead.

The disposition of the crosshead and pins therewith is such that said pins are alternately engaged with an underside groove of the slide-carrier to impart rotary motion to said carrier each time the shaft 55 makes a half turn. By adjustment of the pins in the crosshead, the extent of the intermittent partial rotation of the slide-carrier is determined, and the central transverse fin 59 of said crosshead moves in and out of underside grooves of said carrier. When engaged with a groove of the carrier, the fin of the crosshead acts as a stop to prevent overrunning or backlash of the carrier.

The spacing of the grooves and slots in the carrier for the lantern slides and the timing of the actuating mechanism is such that at each step by step movement of said carrier a slide space of the same is brought into register with the slide-guides on the front of the lantern. By reciprocation of the traveler a lantern slide is moved from the carrier to in front of the lantern back of the projecting lenses of the stereopticon and returned to original position during the time said carrier is at rest, said slide being caught for a time between a depending finger and the stop rib of said traveler. Immediately upon the return of a slide from the guides therefor on the lantern to the registering space in the carrier, there is automatic movement on the part of said carrier to bring another slide in position to be reciprocated as aforesaid.

The slide-carrier is schemed for an arbitrary number of slides, the spaces for which may be registered one by one with the guides on the lantern, or there may be a skip of one or two of said spaces past said guides according to the disposition of the pins of the intermittently rotary crosshead.

The organization of the apparatus as herein shown is such that the permanent slide or shutter is exposed for a brief time between the lantern and lens of the stereopticon when a lantern slide has been moved back from the guides on said lantern into the slide-carrier, but provision for the employment of a permanent slide or shutter is not absolutely necessary.

I claim:

1. In combination with the slide-guides of a stereopticon lantern, a slide-carrier comprising a horizontally circular plate radially grooved at regular intervals upon its upper side together with a conical crown of less base diameter than the plate upon which it is centered to turn therewith and which is provided with wall-slots matching with said plate-grooves, means for imparting intermittent rotary motion to the carrier, whereby slides therewith are successively registered with said guides; and means by which automatic reciprocation is had of a slide in the carrier and guides during a period of rest on the part of said carrier.

2. In combination with the slide-guides of a stereopticon lantern, a circular horizontally disposed slide-carrier, means for imparting intermediate rotary motion to the carrier whereby slides therewith are successively registered with said guides; a shaft extending above the carrier centrally of the same and provided with an upper crank, a

slide-traveler, a guide for the traveler secured to said lantern and supported on a bearing for said shaft, a pitman in connection with said crank and traveler, and means for imparting intermittent rotary motion to the aforesaid shaft during a period of rest on the part of said carrier.

3. In combination with the slide-guides for a stereopticon-lantern, a rotatable slide-carrier comprising a horizontal circular plate having underside grooves at regular intervals thereof, a shaft having an upper crosshead provided with a pair of projections longitudinally thereof equi-distant from its axial center, means for imparting intermittent rotary motion to said shaft, whereby the projections of the crosshead are alternately engaged with said plate-grooves to transmit said motion to the carrier and thus register a slide therein with said guides, and means by which automatic reciprocation is had of said slide in said carrier and guides during a period of rest on the part of the carrier.

4. In combination with the slide-guides of a stereopticon-lantern, a rotatable slide-carrier comprising a horizontal circular plate having underside grooves at regular intervals thereof, a shaft having an upper crosshead provided with a center upper fin and a pair of projections, these projections being equi-distant in opposite directions from the fin, means for imparting intermittent rotary motion to said shaft, whereby said fin is moved in and out of said plate-grooves and said projections alternately engaged with said grooves to transmit said motion to the carrier and thus register a slide therein with said guides, and means by which automatic reciprocation is had of said slide in said carrier and guides.

5. In combination with the slide-guides of a stereopticon-lantern, a rotatable slide-carrier comprising a horizontal circular plate having underside grooves at regular intervals thereof, a shaft having an upper crosshead, a pair of pins adjustable in the crosshead to stand equi-distant from its axial center, means for imparting intermittent rotary motion to the shaft, whereby the pins of the crosshead are alternately engaged with said plate grooves to transmit said motion to the carrier and thus register a slide therein with said guides, the degree of movement of the carrier being variable according to the adjustment of said pins; and means by which automatic reciprocation is had of said slide in said carrier and guides during a period of rest on the part of the carrier.

6. In a stereopticon slide-changing apparatus, a slide-traveler comprising a bar having a depending end finger and a depending web at a suitable distance from the finger, the web being provided with an inner slide stop.

7. In a stereopticon slide-changing apparatus, a slide-traveler comprising a bar having a depending finger at each end and a depending web intermediate of the fingers provided with an inner slide stop.

8. In a stereopticon slide-changing apparatus, a standard, a crank-shaft for which the shaft is provided with bearings, a pinion fast on the shaft, a driven arbor provided with a pair of gear-arms engageable with the pinion, a slide-carrier having the same axial center as said shaft, a crosshead shaft having a pinion fast thereon, another gear-arm extending from said arbor and operative on the pinion of the crosshead shaft in the interval between operations of the paired gear-arms on the pinion of the crank-shaft, a slide-traveler in pitman connection with the crank-shaft, and a rotatable slide-carrier to which motion is transmitted from the crosshead shaft.

9. In a stereopticon slide-changing apparatus, a standard, a crank-shaft for which the shaft is provided with bearings, a pinion fast on the shaft, a driven arbor provided with a pair of gear-arms engageable with the pinion, a slide-carrier having the same axial center as said shaft, a crosshead shaft having a pinion fast thereon, another gear-arm extending from said arbor and operative on the pinion of the crosshead shaft in the interval between operations of the paired gear-arms on the pinion of the crank-shaft, a slide-traveler in pitman connection with the crank-shaft, a rotatable slide-carrier to which motion is transmitted from the crosshead shaft, and spring-controlled reciprocative latches engageable with hubs of the pinions.

10. In a stereopticon slide-changing apparatus, a standard, a crank-shaft for which the shaft is provided with bearings, a pinion fast on the shaft, an electric motor, an arbor in gear with the motor and provided with a pair of gear-arms engageable with the pinion, a slide-carrier having the same axial center as said shaft, a crosshead shaft having a pinion fast thereon, another gear-arm extending from said arbor and operative on the pinion of the crosshead shaft in the interval between operations of the paired gear-arms on the pinion of the crank-shaft, a slide-traveler in pitman connection with the crank-shaft, and a rotatable slide-carrier to which motion is transmitted from the crosshead shaft.

11. In a stereopticon slide-changing apparatus, a standard having an offset hollow post-extension constituting a shaft-bearing, a circular plate having a hub in bearing upon a shoulder of the standard and surrounding said post-extension of the same, the upper side of the plate being radially grooved at regular intervals, a conical crown of less base diameter than said plate upon

which it is centered, the wall of the crown being slotted to match the plate-grooves, and means for imparting intermittent rotary motion to the aforesaid plate and crown therewith.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee in the county of Milwaukee and State of Wisconsin in the presence of two witnesses.

WALTER M. FISCHBACH.

Witnesses:
N. E. OLIPHANT,
M. E. DOWNEY.