No. 734,136. PATENTED JULY 21, 1903.

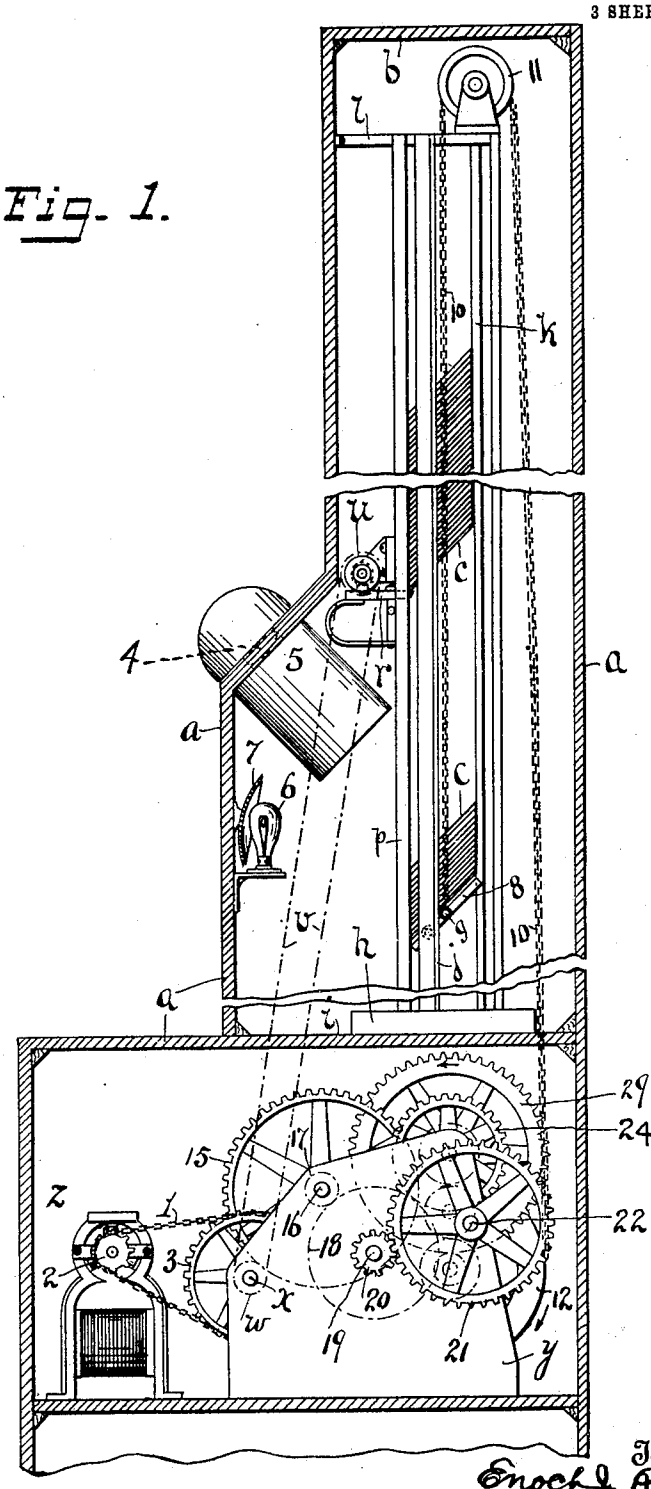
E. J. RECTOR.

KINETOSCOPE.

APPLICATION FILED JULY 2, 1900. RENEWED DEC. 26, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 734,136. PATENTED JULY 21, 1903.

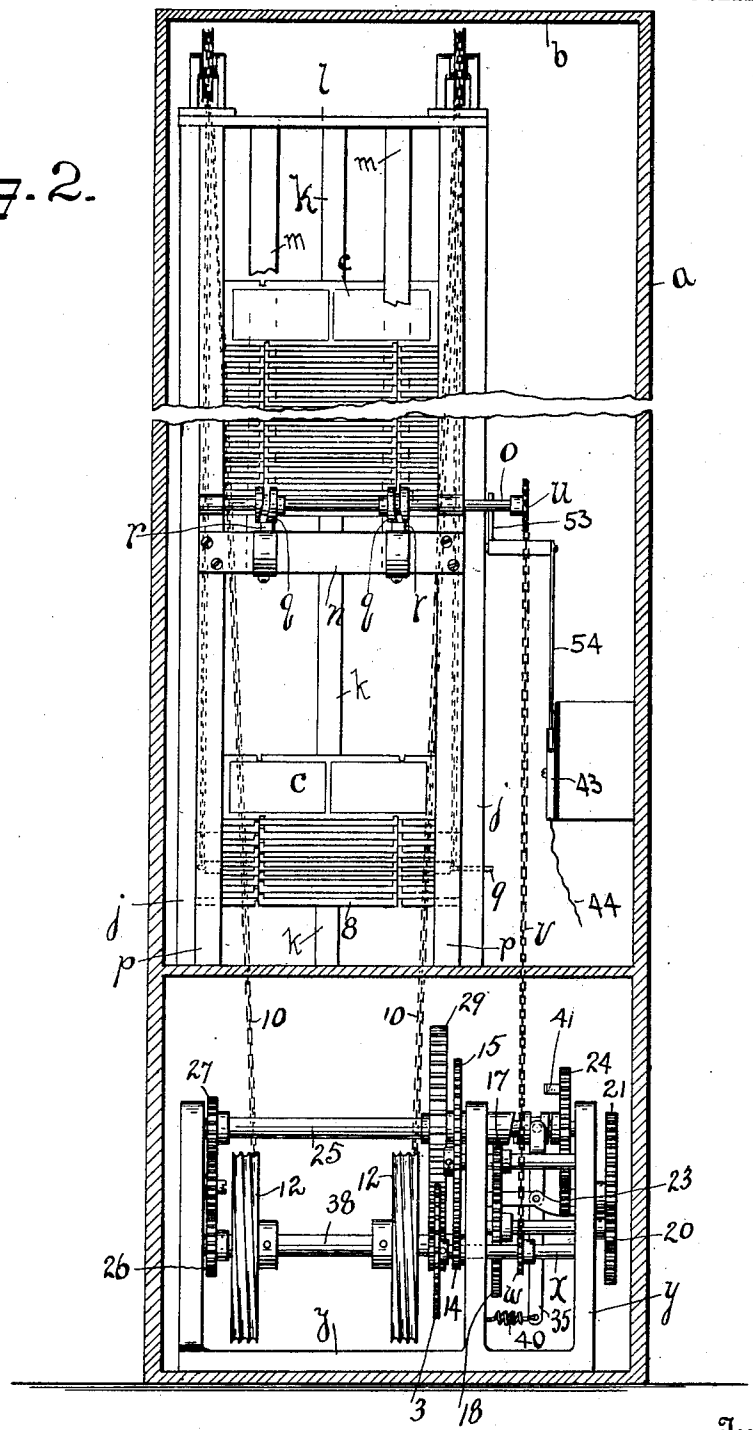
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APPLICATION FILED JULY 2, 1900. RENEWED DEC. 26, 1902.

NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.



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NO MODEL. 3 SHEETS—SHEET 3.

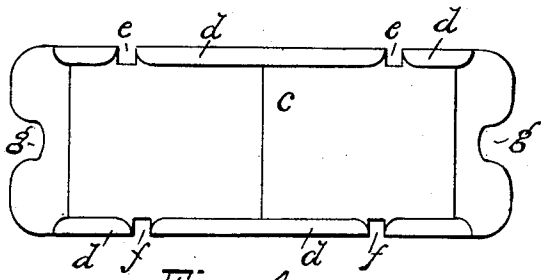


Fig. 4.

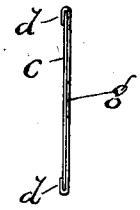
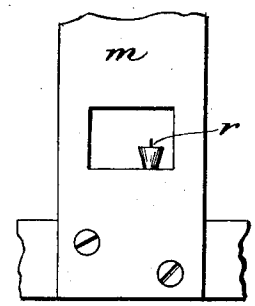


Fig. 5.

Fig. 10.



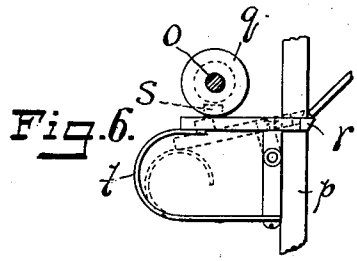


Fig. 6.

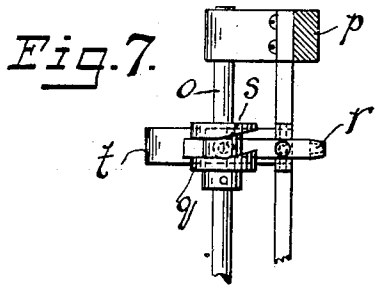


Fig. 7.

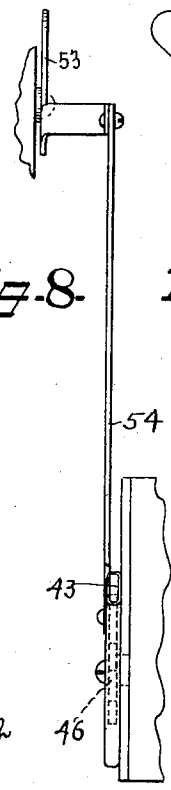


Fig. 8.

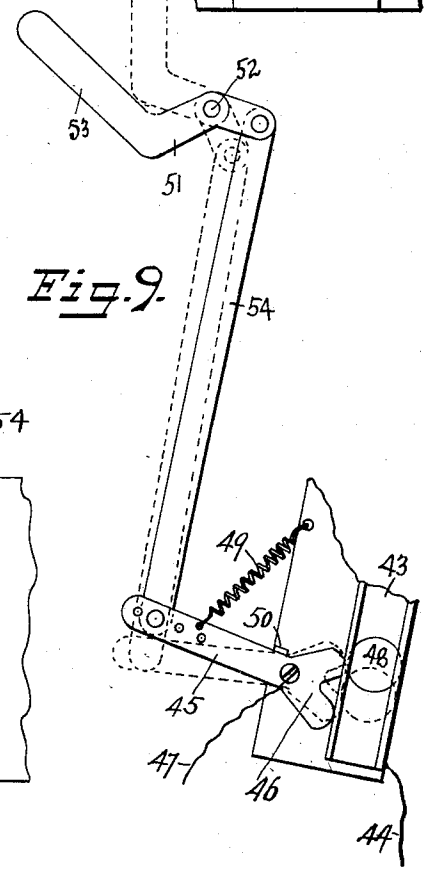


Fig. 9.

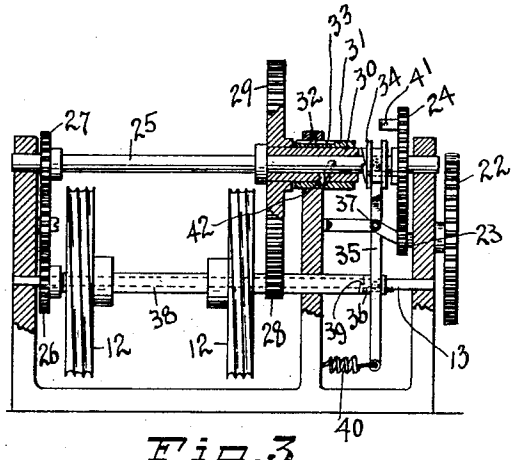


Fig. 3.

Witnesses
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No. 734,136. Patented July 21, 1903.

UNITED STATES PATENT OFFICE.

ENOCH J. RECTOR, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN PANOGRAPH COMPANY, OF PARKERSBURG, WEST VIRGINIA, A CORPORATION OF WEST VIRGINIA.

KINETOSCOPE.

SPECIFICATION forming part of Letters Patent No. 734,136, dated July 21, 1903.

Application filed July 2, 1900. Renewed December 26, 1902. Serial No. 136,730. (No model.)

To all whom it may concern:

Be it known that I, ENOCH J. RECTOR, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented a certain new and useful Improvement in Kinetoscopes, of which the following is a specification.

The present invention relates to apparatus for exhibiting in rapid succession a series of consecutively-taken pictures of an object, one object of the invention being to secure a more realistic effect than heretofore. Another object is to prolong the life of the pictures. Other objects will appear hereinafter. In a prior method of exhibiting such pictures the pictures are carried by a transparent film or ribbon, which moves in a direction at right angles to the line of sight or tangentially, thus moving the pictures edgewise of themselves. In this prior method the pictures are only exposed while at rest in a given position, or they are thrown upon a screen or the eye while they are in continuous motion by means of an optical train. In another prior method the pictures are mounted somewhat as are the leaves of a book and are turned one by one in a well-known manner into position for viewing.

According to the present invention each picture or pair of pictures is independent of and unconnected with every other picture or pair of pictures, and the entire series is arranged in a pack or side against side, with the picture-carrier side down. The pictures may be on either side of the carriers and may be viewed directly or through the medium of an optical train, or they may be projected upon a screen by a suitable projecting apparatus. The picture-carriers are held in an upper or magazine position and are dropped one by one from the bottom of the pack to fall by their own weight. The falling carriers may be arrested in position for viewing the pictures, which is the preferred mode of operation, or the pictures may be on the under side of the carriers and be viewed while at the bottom of the pack. In each case since the pictures move to or from view position by what is properly a sidewise (not edgewise) motion which may be rapid the effect is that the pictures are superposed and that each successive picture takes the place of its predecessor with substantial instantaneousness, thus producing a more perfect illusion or naturalness. The light need not be cut off at any time during the exhibition of the pictures, and the light used may be either transmitted or reflected, according to the nature of the pictures and the surface on which they may be placed.

The invention consists of features of construction and combinations of devices hereinafter described, and more particularly pointed out in the appended claims.

The preferred form of the invention is illustrated in the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of the apparatus, part of the casing being removed. Fig. 1^a is a detail view. Fig. 2 is a front elevation of the same, the casing being removed in part. Fig. 3 is a view, partly in section, of part of the operating mechanism. Figs. 4 and 5 are respectively front and end views of a picture-carrier. Figs. 6 and 7 are side and plan views of detent mechanism for holding and releasing the carriers. Figs. 8 and 9 are views at right angles to each other of coin-controlled circuit-closer and coin-release mechanism.

The same reference character will be used to designate the same part in the drawings.

a is a suitable casing by which the working parts of the apparatus are protected and from which they are supported.

b is a removable section at the top of the casing *a*, providing for an opening for the insertion and the removal of the picture-carriers. The section *b* is secured in place in any suitable manner.

c indicates a picture-carrier formed of sheet metal and provided with turned-over edges or laps *d*, which hold the pictures securely in place, and with notches *e f* at opposite sides of the carrier. The inner edges of the notches *e* are in line across the carrier with the outer edges of the notches *f*. At the ends each car-

rier *c* is provided with notches *g*, having rounded bottoms and sides, for a purpose presently to appear.

h is a metal base-plate secured to a cross-beam *i* of the casing, and *j* indicates vertically-disposed guides, which coact with the notches *g* above named to center and guide the carriers *c*.

k indicates guides which coact with the rear edges of the carriers *c* to retain them in a slanting position. The guides *j k* are secured to the base-plate *h* and to a top frame *l*, which is secured in the casing *a*. When the top section *b* of the casing is removed, the carriers may be dropped down between the guides *j k*. The guides *j k* are preferably arranged so that the carriers *c* are held and guided in a slanting position in all positions thereof at an angle of, say, thirty degrees with the horizontal. At the front of the pack of carriers *c* are two guides *m*, which extend from the frame *l* down in front of the pack to a cross-bar *n*, to which said guides *m* are made fast. Above the bar *n* is a shaft *o*, which is journaled in lugs fast to two uprights *p*. The shaft *o* has two cams *q* fast thereto at points opposite the guides *m*, and the bar *n* has two detents *r* pivotally connected therewith to have motion in a horizontal and in a vertical direction. The detents *r* have antifriction rollers or bowls *s* thereon, which engage with the grooved cams *q*, springs *t* being provided for holding the detents up to keep said bowls in engagement with the cams. The cams *q* swing the detents *r* about their vertical axes, and the springs *t* swing them in an upward direction about their horizontal axes. The guides *m* are slotted for the free movement of the detents *r* in the described manner. The guides *j k* (and *m*) form what may be termed a "well," wherein the picture-carriers are held and guided in their movements up and down.

The carriers *c* are arranged in the well so that alternate carriers have their notches *e* at the front and the other carriers have their notches *f* at the front of the apparatus, so that it results that the notches are staggered and that the detents *r* engage with the lower edge of one carrier at the outside of its notches *f* and with the next carrier at the inside of its notches *e*. The cams *q* are set to cause the detents *r* to move in contrary directions for the release of the carriers, whereby the detents *r* move toward each other as they move to release those carriers whose notches *f* are at the front and away from each other as they move to release those carriers whose notches *e* are at the front. The notches *e f* and detents *r* are so shaped and arranged that the detents both move opposite the notches simultaneously, whereby each of the carriers *c* is released from the control of the detents at one step or time, as it were.

The shaft *o* has a sprocket-wheel *u* thereon, with which a sprocket-chain *v* engages. The chain *v* runs on a like wheel or gear *w*, fast on a shaft *x*, which is journaled in a casting *y*, fast to the bottom of the casing *a*. Motion is communicated to the shaft *x* from a motor *z* by a sprocket-chain 1, which runs on a gear fast to the motor-shaft and a gear 3 on the shaft *x*. The rotation of the shaft *o* and cam *q* causes the detents *r* to be vibrated and the carriers *c* to be released one by one from one and the same plane at the bottom of the pack, each succeeding carrier moving into said plane as its predecessor moves thereout, the two moving simultaneously. By preference the cam-grooves *q* are shaped to give one complete vibration to the detents for each complete turn of the shaft *o*, and the cams are shaped to give a "dwell" to the detents at each extreme of their motion. The lower edges of the carriers engage in succession with the detents and the stack of carriers is thus held up or in magazine position. The notches *e* of one carrier are staggered with respect to the notches *f* of the carrier next above in the pack, and the notches *e f* are arranged to register with the detents *r* when these are in the extremes of their motion, and the dwells above spoken of in connection with the cams *q* are so arranged as that the detents will be held thereby in said extremes of their motion, thus affording time for the carriers to escape by the detents.

From the foregoing it is obvious that each carrier *c* just prior to its escape by the detents *r* occupies the same position in space that its predecessor did just prior to its own release by said detents, so that the pictures on the carriers all start from one and the same position in space, and that they are held stationary momentarily in said position, during which intervals of time they may be observed directly or indirectly if they are placed at the under side of their carriers. I prefer, however, to arrest the falling carriers after their release by the detents *r*, each momentarily in a given position in which the pictures may be viewed directly or through an optical train or from which they may be projected upon a screen by reflected or transmitted light. In the apparatus shown in the drawings the pictures are viewed at right angles substantially by reflected light through stereoscopic lenses 4 in a casing 5, attached to the casing *a*, the light coming from an electric light at 6, a reflector 7 being used, if desired or necessary, to throw the light upon the pictures in view position.

By having the carriers *c* slanting or inclined with respect to the horizontal in front of the aperture for viewing the pictures carried thereby the pictures and carriers fall or cut across the cone of light and into view position more quickly than would be the case were they to fall into view position in some other way, as tangentially.

In case the falling pictures are to be viewed by reflected light or are not to be projected by transmitted light the falling carriers *c* may be arrested by a slowly-descending

catcher 8, the speed of which is so related to the number and thickness of the said carriers falling to it in any given interval as will secure that the topmost carrier supported thereby shall always be stopped in one and the same position and that by the time the catcher or arrester, with the carriers then thereon, shall have descended by a space equal to the thickness in a vertical direction of one carrier the next carrier will have reached the carriers supported by the catcher and will be arrested thereby with its picture or pictures in the plane in which previous pictures were when their respective carriers were similarly arrested. In this way the pictures are superposed, as the falling carrier instantly brings its picture over the previous picture and shuts it out instantly, so that more time for viewing is secured even when the same number of pictures per second is exhibited as in the old methods.

The catcher 8 may be lowered by any mechanism suited to the purpose; but I prefer that shown in the drawings and now to be described. The catcher 8 is preferably held in a slanting position, as by the guides *j k*, and is provided at its ends with pins 9, with which sprocket-chains or other connectors 10 connect, said connectors leading over pulleys 11, journaled in ears rising from the frame *l* and down to a drum 12 on a shaft 13. The drum 12 is spirally grooved to receive the connectors 10 at each end and is cut away between the ends to save weight and space. The shaft 13 is journaled in the frame *y* and is geared with the motor *z* to be oscillated thereby, preferably as follows: The shaft *x* has a pinion 14 thereon, which meshes with a gear 15 on a shaft 16, which is journaled in the casting *y*, and shaft 16 has a pinion 17 thereon which meshes with a gear 18, fast on a shaft 19, journaled in casting *y*. The shaft 19 has a pinion 20 fast thereon, which meshes with a gear 21 on a shaft 22, also journaled in casting *y*. The shaft 22 has a pinion 23 fast thereon, which meshes with a gear 24, fast on a shaft 25, journaled in frame *y*. The drum 12 is sleeved on the shaft 13 to have the capacity of rotating independently thereof. At one end the drum-sleeve has a pinion 26 fast thereon, which is connected with the shaft 25 by pinions 27, one of which is journaled on the frame *y*. The sleeve of drum 12 also has a pinion 28 fast thereto, which meshes with a gear 29, which is fast on a sleeve 30 on the shaft 25, and which may rotate independently of the shaft 25. The sleeve 30 has bearings in a sleeve 31, which has endwise motion in the frame *y*, but which is held against rotation by a pin 32 and groove 33, the pin being in a part of the frame *y* and entering the groove. The gear 29 is held against endwise motion by suitable collars or the like. The sleeve 30 at that end thereof opposite the gear 24 is provided with crown-ratchet teeth for engagement with like teeth on a collar 34, which may slide along, but which is compelled to rotate with the shaft 25. The collar 34 has a circumferential groove with which the forked end of a lever 35 engages for controlling the motion of the collar on the shaft. The shaft 13 has a collar 36, which may slide along but which cannot rotate independently of the shaft 13. The collar 36 also has a circumferential groove therein with which the other forked end of the lever 35 engages to control the endwise motion of the collar. The lever 35 is fulcrumed at 37 intermediate the two collars with which it engages. The sleeve 38 on which drum 12 is fast has a single ratchet-tooth 39 at its end opposite the collar 36, and the collar 36 is notched correspondingly to engaged with said tooth 39. A spring 40 has its ends attached to one end of the lever 35 and to the frame *y* in such wise that the spring and lever tend to hold the collar 36 normally against the sleeve 38, thus closing the clutch for connecting sleeve 38 with shaft 13 and opening the clutch for connecting the shaft 25 with the sleeve 30. The gear 24 has a face-cam 41 thereon in position such that it coacts with the lever 35 at times and moves the lever and the collars operated thereby against the force of the spring 40 to close the clutch connecting shaft 25 with sleeve 30 and to open the clutch connecting the shaft 13 with the sleeve 38. The cam 41 is shaped to release the lever 35 suddenly. The sleeve 30 is connected with the sleeve 31 in such wise that the rotatory motion of the sleeve 30 will cause endwise motion of the sleeve 31, as by means of a spiral groove in one and a pin on the other sleeve, the pin engaging with the groove. Such a connection is indicated at 42. In the foregoing description I have used the word "gear" to designate the larger and the word "pinion" to designate the smaller of engaging toothed wheels, and it will be seen that the train of gearing intermediate the motor *z* and the shafts 13 and 25 acts to reduce the speed.

The electric connections to the motor are arranged in practice to be controlled by a coin in any suitable manner, and I show one method of so doing. 43 is a guideway for the coin, one side thereof being of metal and connected with one terminal 44 of the circuit through the motor *z*. A metal lever 45, having a forked end 46, is connected with the other terminal 47 of said circuit. The forked end 46 is so located with respect to the guideway 43 as that the upper branch of the fork normally lies in position to arrest the descending coin 48, and so to close the circuit through the motor *z*. A spring 49, connected to the lever 45 and to the framework, is tensioned to draw the lever against a stop 50, and thus to bring the upper branch of the forked end into the path of the coin 48. A second lever 51 is fulcrumed at 52 on the framework and has one arm 53 in the path

of one of the pins 9 on the catcher 8. A link 54 is pivotally connected with levers 51 and 45 to communicate motion of one to the other.

The operation of the apparatus is as follows: At the beginning of the operation the carriers *c* are all in magazine position above the detents *r* and the catcher 8 is in position opposite the casing 5, ready to catch the falling carriers. The coin is dropped into the guideway therefor and closes the circuit through the motor *z*, which thereupon starts up. The arrow at the chain 1 indicates the direction in which the chain is driven by the motor and the described train of mechanism rotates the shafts 13 and 25 in the directions indicated by the arrows thereat in Fig. 3, the shaft 13 being connected with the drum-sleeve 38 and the shaft 25 being disconnected from the sleeve 30 at this time. The effect is that the drum 12 is rotated by the weight of the catcher 8 as fast as the clutch 39 36 will permit, and the pinion 28 merely drives the gear 29, while the detents are operated by their cams to drop the carriers *c* one by one from the bottom of the pack to fall along the guides or well until arrested by the catcher 8. As the bottom carrier is released from the pack by the detents the pack moves downward bodily until arrested by the detents *r*, the bottom carrier of the pack thus moving into the place of the liberated carrier as the latter moves out thereof. Each succeeding carrier thus seems to push its predecessor out, as it were. As the falling carriers reach the catcher or the pile of carriers thereon each is arrested in a given plane opposite the lenses 24 in view position, and here again each succeeding carrier seems to push its predecessor until such time as the cam 41 strikes the lever 35 and moves it to cause the collar 34 to move to close the clutch of which it is a part and the collar 36 to move to open the clutch of which it is a part, thus disconnecting shaft 13 and sleeve 38 and connecting collar 34 and sleeve 30, whereupon the direction of rotation of the drum 12 is reversed and the connectors 10 are wound thereon and the catcher 8 and the carriers thereon are raised at a greater speed than that at which the catcher descended until what time all the carriers *c* are above the detents *r*, by which time the pin 9 on that side will have struck the lever 51 and moved it and the lever 45 to the positions thereof shown in dotted lines in Fig. 9, thus allowing the coin to descend until arrested by the lower branch of the fork 46. When the catcher has moved high enough to raise all the carriers well above the detents *r*, the lever 35 slips off the cam 41 and the spring 40 draws the lever over to cause the clutch to connect shaft 13 and sleeve 38 and to disengage the collar 34 and sleeve 30. Since there is much friction between the members of the clutch 34 30, the endwise movable sleeve 31 is provided for positively pushing the collar 34 away from the sleeve 30, which it does under the action of the pin-and-groove connection 42, above described, the parts being so arranged and timed as that the said sleeve 31 effects the disengagement of the clutch 34 30 at the time indicated. On the disengagement of the clutch 34 30 the weight of the parts causes the catcher to drop down until what time the tooth 39 strikes against the longitudinal face of the notch on collar 36, whereupon the catcher is arrested in position in front of the lenses 24. The moment the descending pin 9 clears the lever 51 the spring 49 draws the levers 43 and 51 to the positions thereof shown in full lines, and the fork 46 releases the coin, which thereupon falls into a receptacle therefor, and the circuit through the motor *z* is broken and the parts driven thereby come to rest in proper starting position.

I do not limit myself to the precise form of the invention shown in the drawings and hereinbefore described, since the invention may be embodied in other forms without departing from the spirit of the invention and the scope of my claims.

What is claimed is—

1. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, with means for separating said carriers one by one from the bottom of the pack at a given plane or position to fall side foremost from said plane and simultaneously causing the pack to move downward by gravity, whereby each succeeding carrier is moved side foremost into said plane or position as its preceding carrier moves side foremost thereout, substantially as described.

2. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, a well by which said carriers are guided and caused to move side foremost, and means for separating said carriers one by one from the bottom of the pack at a given plane or position to fall side foremost down said well from said plane or position and simultaneously causing the pack to move downward by gravity, whereby each succeeding carrier is moved side foremost into said given plane or position as its preceding carrier moves side foremost thereout, substantially as described.

3. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, a well by which said carriers are guided and caused to move side foremost, and detent mechanism for retaining said carriers in magazine position at the upper part of said well and releasing them one by one at a given plane to fall side foremost down said well from said plane and simultaneously causing the pack to move downward by gravity, whereby each succeeding carrier is moved into said plane as its preceding carrier falls side foremost thereout, substantially as described.

4. In a kinetoscope, the combination of a pack of detached picture-carriers arranged

with the carriers side down, means for separating said carriers one by one from the bottom of the pack and releasing them to fall side foremost by gravity, and means for arresting said falling carriers in a given position to superpose the images carried thereby and permitting each preceding carrier to move side foremost out of said position as its succeeding carrier falls thereinto, substantially as described.

5. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, a well by which said carriers are guided and caused to move side foremost, means for holding up said carriers and for releasing them one by one at the bottom of the pack to fall side foremost down said well, and means for arresting said falling carriers in a given position to superpose the images carried thereby and permitting each preceding carrier to move side foremost by gravity from and out of said position as its succeeding carrier falls into the same, substantially as described.

6. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, a well by which said carriers are guided and caused to move side foremost, means for holding said carriers up and for releasing them one by one to fall side foremost down said well, and means for arresting and stacking said carriers with the top carrier thereof always in the same plane or position, whereby the images carried thereby are superposed, substantially as described.

7. In a kinetoscope, the combination of a pack of detached picture-carriers, mechanism for retaining them in magazine position and dropping them one by one therefrom, and mechanism for returning them to original position, substantially as described.

8. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, a well by which said carriers are guided and caused to move side foremost, and means for releasing said carriers one by one at a given plane to fall side foremost by gravity down said well, with means for returning said carriers along said well to their initial position, substantially as described.

9. In a kinetoscope, the combination of a pack of detached picture-carriers, vertically-disposed guides coacting with said carriers in all positions thereof and arranged to cause them to move side foremost, detent mechanism for retaining said carriers in magazine position at the upper part of said guides and releasing them to fall side foremost one by one along said guides, a carrier-catcher, and means for lowering said catcher to arrest the topmost carrier thereon in a given plane to superpose the pictures, substantially as described.

10. In a kinetoscope, the combination of a pack of detached picture-carriers, vertically-disposed guides coacting with said carriers in all positions thereof and arranged to cause them to move side foremost, detent mechanism for retaining said carriers in magazine position at the upper part of said guides and releasing them one by one to fall side foremost along said guides, a carrier-catcher, and automatically-reversing mechanism for lowering said catcher to arrest the topmost carrier thereon in a given plane to superpose the pictures and for lifting it and the carriers thereon to return the latter to said magazine position, substantially as described.

11. In a kinetoscope, the combination of a pack of detached picture-carriers, vertically-disposed guides coacting with said carriers in all positions thereof and arranged to hold them in a slanting position and to cause them to move side foremost, detent mechanism for retaining said carriers in magazine position at the upper part of said guides and releasing them one by one to fall side foremost along said guides, a slanting carrier-catcher, and means for lowering said catcher to arrest the topmost carrier thereon in a given plane to superpose the pictures, substantially as described.

12. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, and vertically-disposed guides along which said carriers may fall freely sidewise by their own weight and near the upper ends of which said carriers are held in magazine, with means for holding said carriers in magazine position and releasing them one by one, said means connecting with said carriers intermediate the ends of said guides whereby said carriers are guided both above and below the point of release, and means for arresting said falling carriers all in a given position for superposing the pictures carried thereby, substantially as described.

13. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, vertically-disposed guides along which said carriers may fall freely sidewise by their own weight and near the upper ends of which said carriers are held slantwise in magazine, mechanism for engaging the lower edge of the lowest carrier for retaining the carriers in magazine position and for releasing them one by one to fall unhindered, and means for arresting said carriers in a given slanting position to superpose the pictures carried thereby, substantially as described.

14. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, vertically-disposed guides coacting with said carriers, mechanism for retaining said carriers in magazine position at the upper part of said guides and releasing them one by one from the bottom of the pack to fall side foremost along said guides, a carrier-catcher arranged to move downwardly from an initial position to arrest the falling carriers and superpose the pictures

and to move upwardly to return the carriers to said magazine position and down again to said initial position, and catcher-operating mechanism, substantially as described.

15. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, vertically-disposed guides coacting with said carriers, mechanism for retaining said carriers in magazine position at the upper part of said guides and releasing them one by one to fall side foremost along said guides, a carrier-catcher, an oscillating member connected with said catcher for lowering it from an initial position to cause superposition of the pictures on said carriers and for raising it and the carriers thereon to return the latter to magazine position, and driving mechanism for said member provided with two clutches independently and non-simultaneously connected with said member, substantially as described.

16. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, vertically-disposed guides coacting with said carriers, detent mechanism for retaining said carriers in magazine position at the upper part of said guides and releasing them one by one to fall side foremost along said guides and said detent mechanism having a yielding member for permitting the return of said carriers upwardly and connecting with said carriers intermediate the ends of said guides, whereby the carriers are guided both above and below the point of release, a carrier-catcher for arresting the falling carriers to superpose the pictures carried thereby, and automatic mechanism for lowering and raising said catcher, substantially as described.

17. In a kinetoscope, the combination of a pack of detached picture-carriers, vertically-disposed guides along which said carriers may fall freely sidewise by their own weight and holding said carriers in slanting positions, a detent mechanism engaging with the lower edges of the said carriers, mechanism for operating said detent mechanism to release the carriers one by one, a guided slanting carrier-catcher, and operating mechanism for said catcher for moving it up and down along the guides therefor, substantially as described.

18. In a kinetoscope, the combination of a pack of detached picture-carriers, vertically-disposed guides along which said carriers may fall freely sidewise by their own weight and holding said carriers in slanting positions, means for retaining said carriers in magazine position and releasing them therefrom one at a time at a given point or plane, and arresting mechanism for piling up said carriers as they fall, with means for reversing the direction of motion of the carrier-arrester for returning said carriers along said guides to said magazine position, substantially as described.

19. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, a well by which said carriers are continuously guided and caused to move side foremost and slanting, means for releasing or dropping the carriers one by one from the bottom of the pack to fall by gravity, means for arresting said falling carriers in a given slanting position to superpose the images carried thereby and permitting each preceding carrier to move by gravity out of said position as its succeeding carrier falls thereinto, and operating mechanism for said parts, substantially as described.

20. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers held slantwise by and in magazine near the tops of said guides, means constructed to hold said carriers in and drop them one by one from said magazine position, a slanting arrester for the falling carriers, and automatically-reversible mechanism for moving said arrester downward as the carriers are arrested thereby to maintain the uppermost carrier thereon in view position and for moving said carriers back to said magazine position, substantially as described.

21. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers held slantwise one above another near the tops of said guides and provided with staggered notches at their lower edges, a vibratory releasing-detent device for coaction with said lower edges and notches, and means for operating said detent device, substantially as described.

22. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers held slantwise by said guides and one above another near the tops thereof and provided with staggered notches at their lower edges, a vibratory releasing-detent device for coaction with said lower edges and said notches, means for actuating said device, and means for arresting the falling carriers in a given position to superpose the pictures carried thereby, substantially as described.

23. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers held slantwise one above another by said guides near the tops thereof and provided with staggered notches at their lower edges, a vibratory releasing-detent device for coaction with said lower edges and notches, means for arresting the falling carriers each momentarily in a given position, and mechanism for operating said detent release device, substantially as described.

24. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers held slantwise one above another by said guides and in magazine near the tops thereof, detent mechanism for engaging the lower edge of the lowest carrier for retaining the carriers in position in magazine and for releasing them one by one whereby said carriers fall one by one from magazine, and catcher mechanism for arresting said falling

carriers each momentarily in a given position, with means for reversing the direction of motion of the catcher for returning said carriers along said guides to magazine position, substantially as described.

25. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers held slantwise one above another by and in magazine near the tops of said guides, a detent device engaging with the lower edges of said carriers and releasing them one by one, said detent device being pivoted on a horizontal axis to permit the said carriers to pass by upwardly, means for arresting the falling carriers each momentarily in a given position and permitting them to move on downwardly, means for lifting said arresting means to return said carriers to magazine position, and operating means for said parts, substantially as described.

26. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers held slantwise by and in magazine near the tops of said guides, a drive-shaft rotating in one direction, an escapement for said carriers operatively connected with said shaft whereby the carriers are dropped one by one from the said magazine position, a slanting carrier catcher or arrester, a drum, ligaments connecting said arrester with said drum, and automatically-reversing mechanism connecting said drive-shaft with said drum, substantially as described.

27. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers held slantwise by and in magazine near the tops of said guides, a drive-shaft, mechanism for dropping said carriers one by one from said magazine position, mechanism for arresting them momentarily in position for viewing the images or pictures carried thereby, and mechanism for returning them in a mass to said magazine position, said dropping, arresting and returning mechanisms being operated by said shaft, substantially as described.

28. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers coacting with said guides and held in magazine near the tops thereof, a drive-shaft, mechanism driven from said shaft for dropping said carriers one by one to fall along said guides, and a carrier-catcher that is moved up and down, said catcher being operated or controlled from said shaft and arresting said carriers momentarily in one and the same position for viewing and returning them in a mass to magazine position, substantially as described.

29. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers held slantwise by and in magazine near the tops of said guides, means for dropping said carriers one at a time, an oscillatory drum, a reciprocatory carrier-catcher operatively connected with said drum, and mechanism for actuating said drum and dropper means, substantially as described.

30. In a kinetoscope, the combination of vertically-disposed guides, a pack of detached picture-carriers held slantwise by and in magazine near the tops of said guides, a dropper for releasing said carriers one by one at a given point to fall along said guides, an oscillatory drum, means operated by said drum for catching the falling carriers and returning them *en masse* to magazine position, and actuating means for said dropper and said drum, substantially as described.

31. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with one side down, means for releasing said carriers one by one from the bottom of said pack at a given point to fall side foremost, a catcher by which said falling carriers are arrested to re-form the pack with one side down, and mechanism for moving said carrier-catcher upwardly to return the said pack to its first position, substantially as described.

32. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with one side down, means for releasing said carriers one by one from the bottom of the pack to fall side foremost from a given plane, an up-and-down movable catcher on which said falling carriers again form the pack with one side down, and an oscillatory drum connected with said carrier-catcher to control the motion thereof in arresting and returning said carriers, substantially as described.

33. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with one side down, means for releasing them from the bottom of the pack one by one at a given plane to fall side foremost, an up-and-down movable carrier-catcher, an oscillatory drum connected with and controlling the motion of the said catcher, a drive-shaft, a one-way clutch having members engaging with each other at a single point and connected with said drum and said shaft and acting to prevent the catcher from moving down except as permitted by said clutch during the dropping of the carriers, a second clutch driven from said shaft and geared to drive said drum to raise said catcher, and means for throwing said clutches alternately into and out of operation, substantially as described.

34. In a kinetoscope, the combination of a pack of detached picture-carriers, vertically-disposed guides therefor, mechanism for detaining said carriers in an upper magazine position and releasing them therefrom one by one, a traveling arrester for said carriers, a shaft rotating in one direction only, an alternating or oscillating member connected with and controlling said arrester, duplex connections between said shaft and said alternating member, and a switching device for throwing said connections into gear with said shaft alternately, substantially as described.

35. In a kinetoscope, the combination of a pack of detached picture-carriers, vertically-disposed guides therefor, detaining and releasing mechanism for said carriers, a traveling arrester for said carriers, an oscillating drum connected with said arrester, a progressively-rotating shaft, a one-way one-tooth clutch for connecting said drum and said shaft, a second progressively-rotating shaft, a gear loose on said second shaft and geared with said drum, a clutch for connecting said second shaft and said loose gear to reverse the motion of the drum and arrester, means for driving said shafts, and means for engaging said clutches alternately, substantially as described.

36. In a kinetoscope, the combination of two progressively-rotating gears, a drum, a one-way single-tooth clutch for connecting said drum and one of said gears to drive the drum in one direction, gearing containing a clutch for connecting said drum with the other of said gears to drive the drum in the other direction at a greater speed, means for throwing said clutches into and out of engagement alternately, vertically-movable and guided independent unconnected picture-carriers, means for dropping said carriers one by one flatwise, and an arrester for said carriers connected with and controlled by said drum, substantially as described.

37. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, mechanism for dropping them one by one from the bottom of the pack, an up-and-down movable arrester for said falling carriers, said arrester at the beginning of the dropping of the carriers being intermediate the extremes of its motion, and differential speed and releasing mechanism for lowering said arrester as the carriers pile thereon and for returning the same upward at a greater rate of speed to the upper extreme of its motion and there releasing it to fall by gravity to its initial position and there arresting it, substantially as described.

38. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with one side down in magazine position, means for releasing them one by one from the bottom of the pack to fall side foremost, an arrester for said falling carriers having a limited up-and-down motion and being intermediate the extremes of its motion at the beginning of the dropping of said carriers, means for lowering said arrester as the carriers pile thereon said means having a clutch, speed mechanism for returning said arrester at a greater rate of speed to the upper extreme of its motion and said speed mechanism having a clutch, a spring-pressed lever for actuating said clutches, and means for actuating said lever and releasing the same as the said arrester reaches the upper extreme of its motion, substantially as described.

39. In a kinetoscope, the combination of vertically-guided independent unconnected picture-carriers, a vertically-guided carrier arrester and returner on which the carriers pile themselves, detent means for releasing said carriers one by one to fall freely toward said carrier-arrester, an oscillatory drum connected with said arrester to control the same, a drive-shaft, and two independent connections between said shaft and said drum each of said connections containing a clutch for rotating the same in opposite direction at different speeds with means for throwing said clutches into and out of action alternately, substantially as described.

40. In a kinetoscope, the combination of vertically-disposed guides, independent unconnected picture-carriers thereon provided with staggered notches at their front edges, a vibratory detent for engagement with said edges and releasing said carriers and mounted upon horizontal and vertical axes, a cam, and connections between said cam and said detent for vibrating the latter horizontally, with a spring for keeping the detent and cam in engagement, substantially as described.

41. In a kinetoscope, the combination of vertically-disposed guides, independent unconnected picture-carriers thereon provided with staggered notches at one edge, a cam-operated vibratory detent for coaction with said edges and notches, and yielding upwardly, a carrier-catcher mounted to move up and down on said guides, and mechanism for operating said cam and said catcher, substantially as described.

42. In a kinetoscope, the combination of vertical guides *j*, picture-carriers guided thereby, and a guide *k* arranged adjacent to and parallel with the guides *j* to coact with the carriers to hold them in a slanting position, with detent mechanism coacting with the lower edges of the carriers to hold the carriers and release them one at a time, substantially as described.

43. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, said pack being initially in an upper position, means for releasing said carriers one by one at a horizontally-disposed plane at the bottom of the pack to fall side foremost the pack moving downward by gravity, whereby each succeeding carrier moves into said plane as its preceding carrier moves thereout side foremost, and means for arresting said falling carriers and stacking them side down in the same succession and relative position from top to bottom as in said upper position, substantially as described.

44. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down and slanting, mechanism for holding said carriers up and releasing them one by one at a given plane to fall side foremost by gravity, each succeeding carrier moving into said plane as its preceding carrier moves thereout side foremost, and

means for arresting said falling carriers in one and the same slanting plane whereby the carriers cut across the cone of light the more quickly, substantially as described.

45. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with the carriers side down, means for holding up said carriers and releasing them one by one at a given horizontally-disposed plane to fall side foremost by their own weight, and an up-and-down movable catcher to which said falling carriers move directly and on which they are stacked, with catcher-operating means, substantially as described.

46. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with one side down, means for releasing said carriers one by one from a given plane to fall by their own weight, a vertically-movable carrier-catcher, and means for lowering said catcher to arrest the falling carriers each in a given position for superposing the pictures carried thereby, substantially as described.

47. In a kinetoscope, the combination of a pack of detached picture-carriers stacked flatwise upon each other, means for lowering said carriers to and releasing them one by one from a given position to fall sidewise of themselves by their own weight a catcher or arrester for said carriers, mechanism for lowering said catcher to arrest the carriers each in a given position to superpose the pictures carried thereby, and catcher lifting and releasing mechanism for lifting the catcher for returning said carriers to original position and then dropping the catcher back to its original position, substantially as described.

48. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with one side down, vertically-disposed guides arranged to hold said carriers in a slanting position, means for releasing the carriers one by one from a given plane to fall side foremost along said guides, a guided slanting carrier-catcher initially at a distance below said given plane, means for lowering said catcher as the carriers are released, and automatically-acting means for lifting said catcher to return the carriers to their initial position and returning said catcher to its initial position thereafter, substantially as described.

49. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with one side down, vertically-disposed guides coacting with said carriers in all positions thereof and arranged to cause them to move side foremost, detent mechanism for retaining said carriers in place and releasing them one by one to fall side foremost along said guides, a guided carrier-arrester that is moved up and down, a driver that is moved in one direction only, and mechanism between said driver and said arrester having motion-reversing elements one connected continuously with said arrester as it is running up to return said carriers to their first position and the other discontinuously connected with said arrester as it moves down by its own weight whereby said arrester may fall for a part of the way, substantially as described.

50. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with one side down, vertically-disposed guides coacting with said carriers in all positions thereof and arranged to cause them to move side foremost, detent mechanism for releasing said carriers one by one to fall side foremost along said guides, a guided vertically-movable carrier-arrester, an oscillatory drum connected with said carrier-arrester, and mechanism for operating said drum and provided with two clutches alternately connected with said drum and one of said clutches being continuously connected with the drum during the up motion of the arrester and the other clutch being discontinuously connected with the drum during the descent of the arrester, whereby said arrester may fall by its own weight for a part of the way, substantially as described.

51. In a kinetoscope, the combination of a pack of detached picture-carriers arranged with one side down, vertically-disposed guides arranged to cause said carriers to move side foremost, a drive-shaft, carrier-releasing devices operatively connected with said shaft and releasing said carriers one by one to fall side foremost along said guides, a guided carrier-catcher arranged initially at a distance below said point of release of said carriers, means for lowering said catcher as the carriers fall thereto for arresting said falling carriers each in one and the same plane, automatic catcher-lifting means coming into operation as said lowering means reaches a given point to raise said catcher to cause it to return said carriers to their initial position, and means for disconnecting said lifting means after said carriers are so returned to their initial position by the catcher and for reëngaging said lowering means as the catcher reaches its said initial position, substantially as described.

52. In a kinetoscope, the combination of a pack of detached picture-carriers having staggered notches at one side thereof each carrier having two notches, a pair of horizontally-swinging detents engaging with said carriers and releasing them, and means for moving said detents simultaneously in opposite directions, substantially as described.

53. A picture-carrier for kinetoscopes comprising a sheet-metal or like support provided with guiding-notches at opposite edges thereof and having opposite edges turned over and clamping a picture in place against the body of the support, substantially as described.

54. A picture-carrier for kinetoscopes comprising a sheet-metal or like support provided with pairs of releasing-notches at opposite edges thereof, the notches at one edge having their inner edges in line across the carrier with the outer edges of the other pair of

notches and a picture secured to said carrier, substantially as described.

55. A picture-carrier for kinetoscopes comprising a sheet-metal or like support provided with guiding-notches at opposite edges thereof and with pairs of releasing-notches at other opposite edges thereof, the inner edges of one of said pairs of releasing-notches being in line across the carrier with the outer edges of the other pair of releasing-notches, and a picture secured to the carrier, substantially as described.

56. The combination of a flat metal carrier provided with folded-over clamping edges and a picture clamped between said turned-over edges and the body of the carrier, whereby the picture rests against the plate for exposure to view in exhibiting apparatus, substantially as described.

57. A series of consecutive-view pictures for kinetoscopes each mounted upon an independent or individual carrier and held securely in place thereon by turned-over edges thereof which clamp the picture against the body of the carrier, substantially as described.

58. A picture-carrier for kinetoscopes comprising a metal support having opposite edges folded over and clamping a picture against the body of the support, and releasing-notches in one of said folded-over edges, substantially as described.

Signed at New York city, in the county of New York and State of New York, this 26th day of May, A. D. 1900.

ENOCH J. RECTOR.

Witnesses:
GUS. C. HENNING,
R. W. BARKLEY.