No. 700,709. Patented May 20, 1902.

G. W. SMITH & W. A. SOMERS.

PICTURE PROJECTING APPARATUS.

(Application filed June 24, 1897.)

(No Model.) 4 Sheets—Sheet 1.

Fig-1

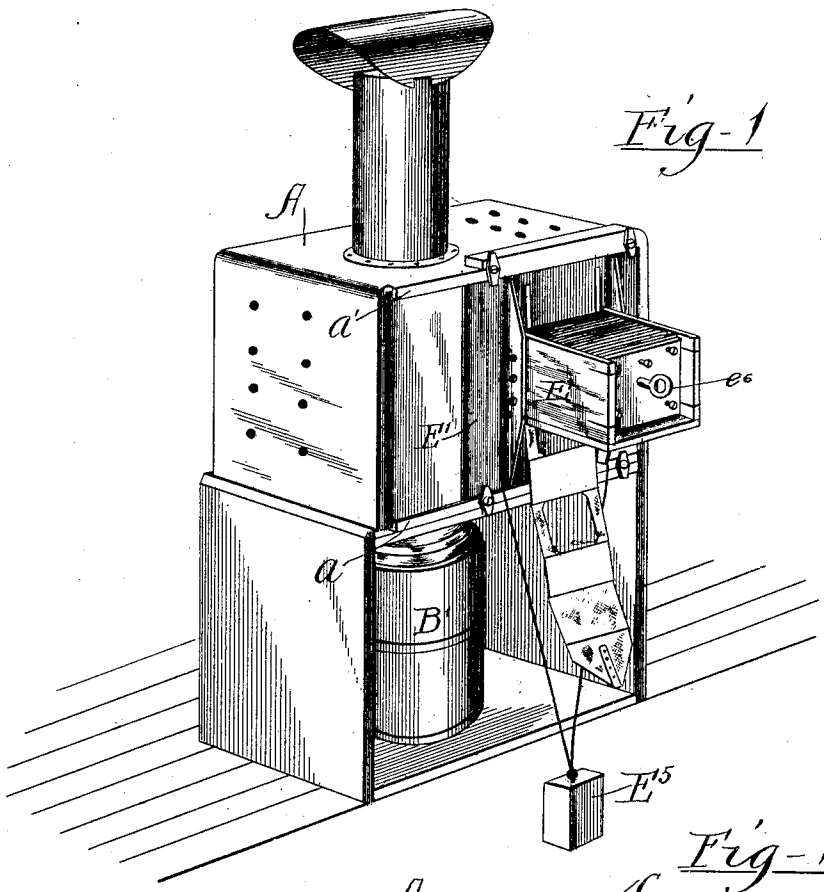
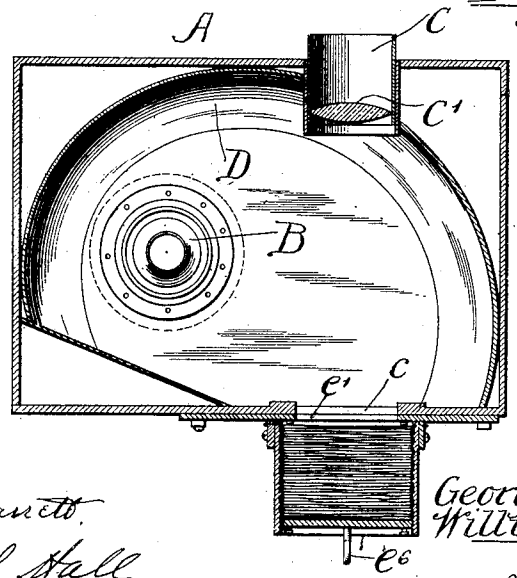


Fig-2



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William A. Somers
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his Attys.

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

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(No Model.) 4 Sheets—Sheet 2.

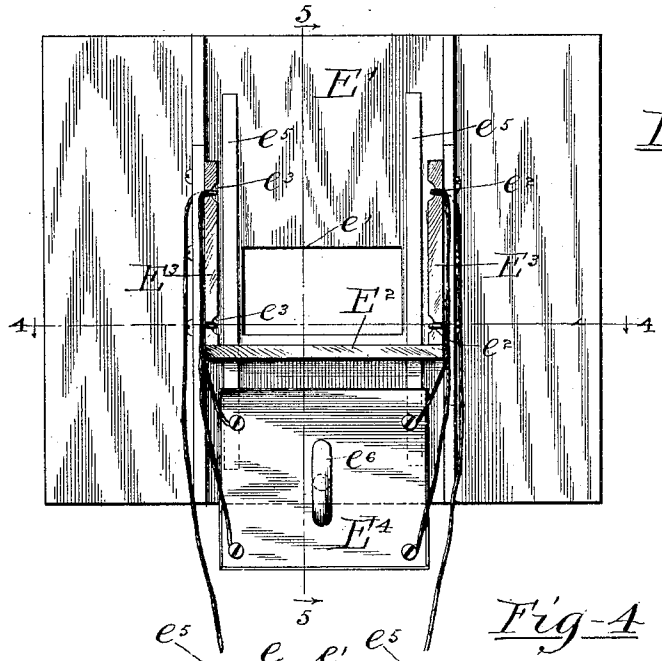


Fig-3.

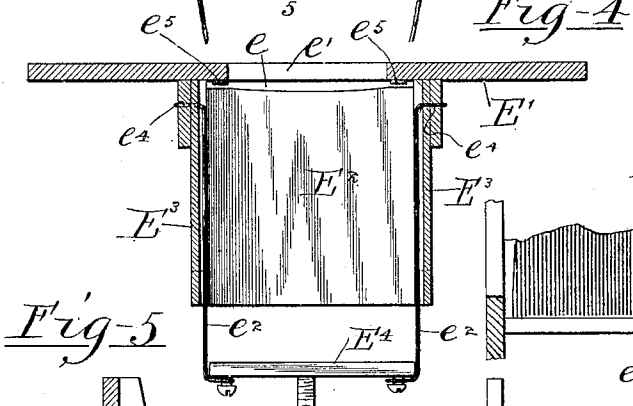


Fig-4

Fig-5

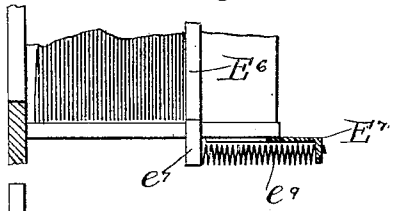
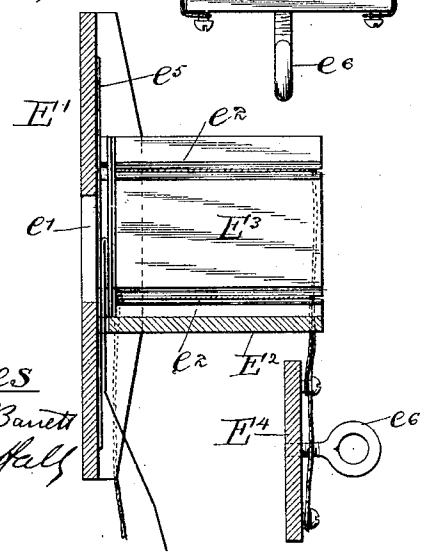


Fig-6



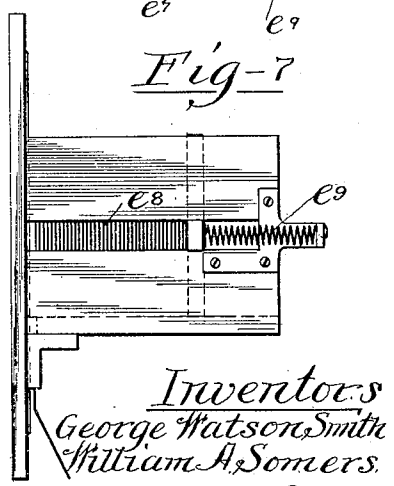


Fig-7

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PICTURE PROJECTING APPARATUS.

(Application filed June 24, 1897.)

(No Model.) 4 Sheets—Sheet 3.

Fig-8

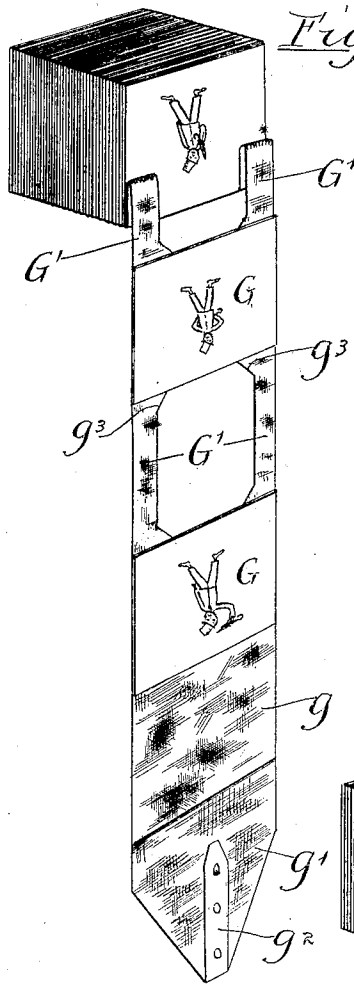


Fig-9

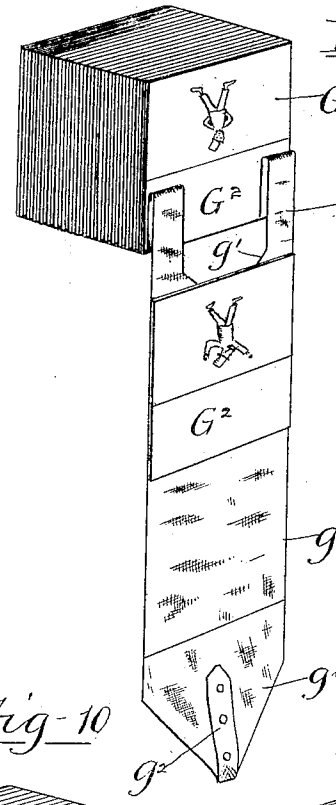


Fig-10

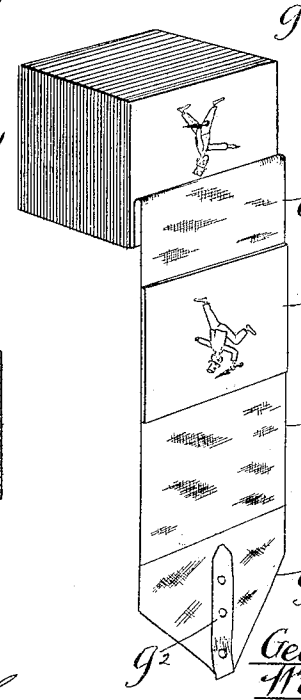


Fig-11

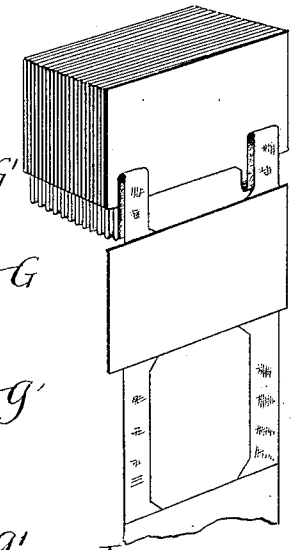
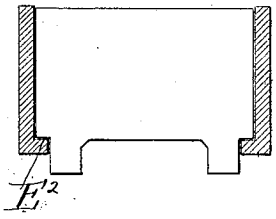


Fig-12



Witnesses

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G. W. SMITH & W. A. SOMERS.

PICTURE PROJECTING APPARATUS.

(Application filed June 24, 1897.)

(No Model.) 4 Sheets—Sheet 4.

Fig-13.

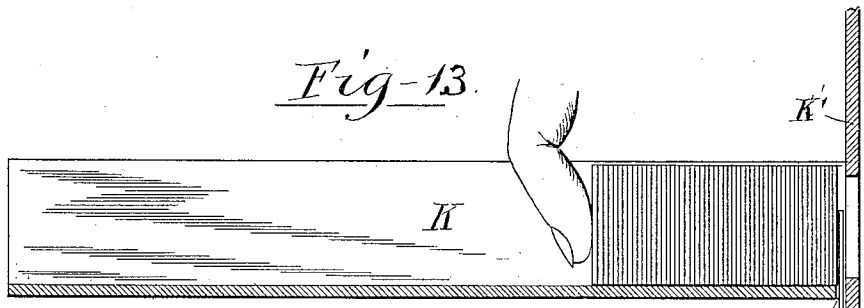
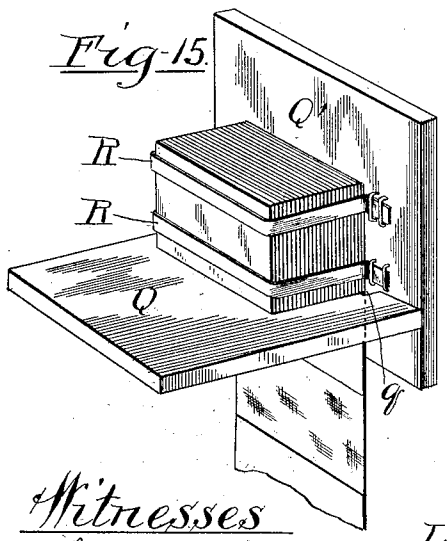


Fig-15.



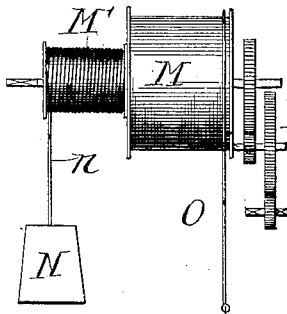
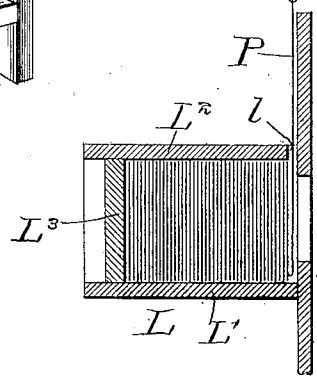


Fig-14.



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UNITED STATES PATENT OFFICE.

GEORGE WATSON SMITH, OF EVANSTON, ILLINOIS, AND WILLIAM A. SOMERS, OF ST. PAUL, MINNESOTA; SAID SOMERS ASSIGNOR TO SAID SMITH.

PICTURE-PROJECTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 700,709, dated May 20, 1902.

Application filed June 24, 1897. Serial No. 642,033. (No model.)

To all whom it may concern:

Be it known that we, GEORGE WATSON SMITH, of Evanston, in the county of Cook and State of Illinois, and WILLIAM A. SOMERS, of St. Paul, county of Ramsey, State of Minnesota, have invented certain new and useful Improvements in Picture-Projecting Apparatus; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improved apparatus in the nature of a kinetoscope, its purpose being to project successively upon a screen a plurality of pictures in such manner as to produce what are known as "moving" or "living" pictures.

A main feature of our invention is embraced in an apparatus consisting of a plurality of opaque pictures, such as ordinary photographic prints mounted upon paper or cardboard, a lamp or other source of light by which the pictures are illuminated, an object-lens operating to project the pictures upon the screen by reflected light, and means acting to bring the opaque pictures successively into position for projection, or, in other words, in alinement with the optical axis of the projecting-lens and at the point where they will be illuminated by the lamp or illuminating apparatus. An apparatus operating to project a plurality of opaque pictures by reflected light has the advantage over those heretofore used, in which the pictures are projected by light transmitted through a transparent film or strip, of avoiding the necessity for employment of transparent pictures, so that photographs prepared in the ordinary manner on paper or other opaque substance may be used, thereby greatly decreasing the expense of preparing the pictures for exhibition. The construction described has also the advantage of avoiding the necessity for the use of feeding devices adapted or designed for permitting the transmision of light through the picture strip or ribbon and which, therefore, may be of cheaper and more simple character than those used in similar prior apparatus.

As another and important improvement our invention includes a construction in a projecting apparatus embracing a plurality of pictures, which are arranged in superposed order or one in front of another in connection with a holder sustaining the several pictures in position facing the object-lens of the apparatus in such manner as to permit the pictures to be moved together toward the point of projection, said holder being so constructed that the pictures at the front face of the mass or series may be successively removed to expose those behind them, thereby enabling all of the pictures of the series to be brought successively into position for projection. This arrangement of opaque pictures has the advantage of greatly simplifying the projecting apparatus, inasmuch as mechanism of exceedingly simple character may be employed to support and move the pictures, while the pictures may be successively removed for exhibition of the pictures behind them either by hand or very simple mechanical means.

As a further improvement in devices of this character we contemplate the employment of a continuous strip consisting of a plurality of pictures connected by flexible sections or webs equal to or greater in length than the length of the pictures, said pictures and the webs being adapted to be folded into a compact mass, with the pictures and webs alternating and in superposed order, so that when the folded package is held in a suitable support or holder the several pictures may be successively removed by applying suitable tension to the end of the strip. A picture-strip thus made not only has the advantage of being cheaply and easily constructed in a manner for the convenient handling or manipulating of the pictures, but also of affording a means of moving the pictures in a manner to produce the best results in their exhibition—that is to say, it is found desirable in the exhibition of a series of pictures in such manner as to reproduce the movements of the persons or things photographed that each

picture should remain as long as possible in the projecting position and should be drawn away and a new picture substituted in the shortest possible time. This result is obviously produced by employment of the strip made as described, for the reason that each picture remains immovable while the flexible section is being drawn or pulled from its position in front of the same, and as soon as the flexible section is drawn taut the picture will be drawn or carried from its place, thereby exposing the picture behind it, which latter will similarly remain stationary during the drawing away of the next connecting-web and until the latter shall have been pulled out straight and shall in turn draw away the succeeding picture. We also propose as a separate and further improvement to construct said flexible connecting pieces or webs with central openings through which the pictures are exposed, this construction leaving each picture fully exposed as soon as the overlying picture has been drawn away from it and until it is itself moved or shifted out of its place by the tension applied to the strip. A picture-strip made as described, moveover, can be easily and readily operated by hand, so that by the use of such strip a practical projecting apparatus may be constructed without the use or employment of any device or apparatus for giving intermittent movement to the pictures or picture-strip.

In addition to the matters hereinabove referred to our improvement embraces other novel features of construction in a picture-projecting apparatus of the character mentioned, as will hereinafter appear.

The invention may be better understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a projecting apparatus embodying our invention. Fig. 2 is a horizontal or plan section taken through the object glass or lens and the picture-holding device. Fig. 3 is a face view of the picture-holder removed from the machine, the presser being shown as displaced in order to better illustrate the construction of the parts. Fig. 4 is a plan view of the holder, taken on line 4 4 of Fig. 3. Fig. 5 is a vertical section of the holder, taken on line 5 5 of Fig. 3. Fig. 6 is a detail view showing part of the holder in plan view, the picture-holder in this instance having a spring-actuated presser for moving the pictures. Fig. 7 is a view in side elevation of the picture-holder shown in Fig. 6. Fig. 8 is a view showing a picture-strip constructed in accordance with our invention, said strip being shown as partially folded. Fig. 9 illustrates a picture-strip differing somewhat from that shown in Fig. 8. Fig. 10 illustrates the picture-strip in which the flexible sections are without any central openings or apertures. Fig. 11 illustrates a picture-strip in which the flexible sections are of greater length than the pictures. Fig. 12 shows in cross-sectional view a holder for a picture-strip like that shown in Fig. 11 with the pictures therein. Fig. 13 is a sectional view illustrating a holder for a series of separate or unattached pictures, together with a means for removing the pictures one by one. Fig. 14 illustrates a mechanism for withdrawing the pictures on the endless band successively from a picture-holder. Fig. 15 illustrates a simple form of holder for the picture-strip.

As shown in said drawings, A indicates a casing on which the several parts of the apparatus are mounted and within which is located a lamp B, the oil-receptacle B′ of which is shown in the drawings, Fig. 1, as located below the bottom of the casing A. Said casing A contains an object-lens tube C, in which is located an object-lens C′, and within said casing is located a curved mirror D, which acts to throw the light from the lamp B upon a picture arranged in a picture-opening *c*, located in the rear wall of the casing at a point opposite the object-lens.

E indicates a holder for the pictures to be projected, said holder, as shown in Figs. 1 to 5, consisting of a rectangular trough or box which is secured to and projects outwardly from the plate E′, which has detachable connection with the rear wall of the casing A, the attaching means illustrated conveniently consisting of lower and upper ledges *a a′*, between which the plate E′ is inserted, and turn-buttons which engage the edges of said plate to hold the same in place. Said holder consists of a bottom wall E^2 and two side walls E^3, which constitute a trough or open-ended receptacle into which the pictures are adapted to fit crosswise and which is adapted to contain a package of said pictures when the latter are placed together to form a compact mass in the manner seen in Figs. 8, 9, and 10. At the inner end of the holder E, between the bottom wall of the same and the plate E′, is formed an exit slot or opening *e*, through which the pictures are withdrawn or removed one by one as necessary for the successive display of the several pictures in the mass. The said plate E′ is provided with a picture-opening *e′*, corresponding with the opening *c*, and opposite which the pictures are successively brought when in position for projection.

E′ is a presser which is inserted and slides within the holder E and is adapted to act upon the rear or outer end of the package or pile of pictures in such manner as to carry or force the same along or through the holder and to keep the forward picture of the series pressed against the plate E′ and the picture-opening therein, the picture being thereby retained at all times in a position at right angles with the central or axial line of the object-lens. Many different forms of actuating devices may be employed to move or shift the presser in the manner described, that illustrated in Figs. 1 to 5 being constructed as follows: Attached to the opposite ends of the

presser, at points near the upper and lower edges of the same, are strings or cords e^2 e^2, which pass through longitudinal grooves e^3 in the side walls of the holder and thence outwardly through guide-holes e^4 e^4, Fig. 4, in said side walls, said cords being connected with a weight E^5, which acts constantly upon the cords in such manner as to force or carry the presser inwardly in the holder, and thereby force or press the mass or package of pictures toward the opening e', formed in the plate E'. The slot e is preferably made wider at its central part than at its ends, so that the central parts of the strip and the pictures thereon will be free from contact with the sides of said slot, and the strip will be guided by engagement of its side margins only with the end portions of the slot. This construction not only lessens friction, but provides for a slight bending of the pictures. On the face of the plate E' are preferably placed vertical guide-strips e^5 e^5, in contact with which the pictures rest at their side edges and along which the strip moves or slides as it is drawn out of the holder. A handle e^6, attached to the presser, enables the same to be conveniently pulled out in reloading or refilling the holder.

In Figs. 6 and 7 is shown a modified form of the picture-holder, said holder in this instance being provided with a presser E^6, which is provided at its ends with projecting lugs e^7, which pass through horizontal slots e^8 in the side walls of the holder and are engaged with spiral springs e^9, which are compressed between the said projections e^7 and brackets E^5, attached to the outer part of the holder. Said springs act expansively on the said presser to carry the same toward the front or exit end of the said holder. The springs illustrated in this instance obviously perform the same function as does the weight E^5, above referred to, the pictures in either case being carried or moved bodily toward that end of the holder from which the pictures are successively removed.

In Figs. 8, 9, and 10 we have shown several forms of a picture-strip which may be employed in connection with an apparatus of the kind described. In Fig. 8 the strip consists of a plurality of pictures or picture-cards G G, consisting of paper or cardboard, and which are connected by means of flexible webs G', said webs consisting in this instance of narrow strips or ribbons disposed at opposite edges or sides of the pictures. The beveled edges g^3 where the ribbons join the picture serve to strengthen the webs where creased or folded. The figure of the drawings referred to illustrates the mode of folding the strip described, and it will be seen that the several pictures G G are arranged one in front of the other, with the flexible sections folded between them. It follows from this construction that if the strip be unfolded by tension applied to one end of the same in a direction to carry it at right angles to the mass of pictures the several pictures will be successively removed, while each of the pictures will remain stationary during the time the folded section is being withdrawn from in front of the same, so that a continuous pull or tension on the strip will not result in the uniform movement of the pictures; but said pictures will be removed one by one, with an interval of time between their removal equal to that needed to withdraw the folded flexible section from its place in front of each picture. The strip shown in Fig. 8 is provided at its ends with a blank section and a tapered part g', reinforced by a metal stiffening-strip g^2 in order to facilitate the insertion of the end of the strip through the slot e when placing the folded strip within the holder E. A strip consisting of picture-cards and flexible sections folded as shown in Fig. 8 is inserted in the holder E by first removing the presser and then inserting the tapered end of the strip through the slot e of the holder and then placing the mass or package of pictures in the holder adjacent to the opening e' and facing the object-lens. The presser is then placed against the outer surface of the package, so that it will tend to constantly press or carry all of the pictures toward the inner end of the holder and retain the foremost picture in contact with the plate E'. The pictures are successively brought into projecting position by the action of the presser in connection with a strain or tension on the end of the picture-strip sufficient to draw or pull said strip through the slot of the holder, it being obvious that as the strip is so pulled through said slot the pictures will be removed one by one from the front face of the mass or package and that the succeeding pictures will be slid forward in the holder as fast as the preceding ones are removed, thereby maintaining a picture at all times in position for projection. As each picture is drawn downwardly through the slot the flexible parts or webs connecting it with the succeeding picture will follow it through the slot and away from its position at the side margins of the succeeding picture, so that each picture will remain in one position and will be exposed for projection from the time the superposed picture is removed until the underlying picture itself is drawn out through the slot. In Fig. 9 we have shown a form of picture-strip which is like that before described in every respect, excepting that the pictures are in this instance mounted on cards or stiffened sections which are of greater length than the pictures themselves, thereby leaving an unoccupied margin G^2 between each picture and the flexible section by which it is connected with the preceding picture. The presence of such margin gives a somewhat-greater exposure of each picture, or, in other words, enables each picture to remain immovable a relatively longer time than would otherwise be the case, it being obvious that the connecting-web will in this instance be considerably longer than the actual length

of the picture itself, so that it will take a relatively longer time to draw out or unfold each web before the succeeding picture is moved. In Fig. 10 is shown a picture-strip which is like that shown in Fig. 8, with the exception that the flexible sections are in this instance without any central openings. This construction in the strip is not so desirable as that before described, for the reason that by the presence of the folded section in front of each picture during the removal of the said section the time of exposure of the picture is somewhat reduced, it being obvious that in this instance the underlying picture will not be fully exposed as soon as the superposed one has been removed, but that the said underlying picture will be gradually uncovered as the flexible section is withdrawn from in front of the same. It will be seen, however, that in this instance the underlying picture will be only half-covered by the flexible section at the time the underlying picture has been moved a distance equal to its length, so that one-half of each picture will be exposed practically as long as in the constructions first described, the presence of the flexible section affecting the time of exposure of only a part of the surface of each underlying picture. An increase in the time of exposure of each picture (as compared with the time occupied in shifting the pictures) may be obtained by making the spaces between the pictures, or, in other words, the length of the flexible sections, greater than the length of the pictures themselves and allowing the superfluous cloth in the flexible sections to hang in loose folds when the pictures are superposed or packed together. Such a construction is illustrated in Figs. 11 and 12. In Fig. 11 a strip is shown made like that illustrated in Fig. 8, but having connecting-sections G′ longer than the pictures G. Fig. 12 shows a holder adapted to receive a strip, such as is shown in Fig. 11. In this instance the pictures are made wider than the flexible sections, so as to leave projecting surfaces or shoulders outside of the sections, which are adapted to engage and rest upon ledges E^2, formed inside of the side walls of the holder, the flexible sections in this instance depending through the central space in the bottom of the holder in an obvious manner.

While the holders illustrated are of very simple construction, yet a still simpler form thereof may be employed in which the package of pictures rests on a shelf having a slot for the passage of the strips and is drawn toward the picture-opening of the lantern by means of elastic or india-rubber bands secured at their ends to the inner end of the holder and drawn at their central parts around the outer portion of the package. A construction of this kind is shown in Fig. 15, in which the shelf Q is provided with a slot q, and two rubber bands R R are attached at their ends to the wall Q′, which contains the picture-opening.

In constructing a picture-strip such as has been above described one practical way of doing so is to paste on a cloth strip a series of picture-cards at uniform distances apart, so that the intermediate parts of the cloth strip may form the flexible sections, the picture-cards being made of thick paper or cardboard, so as to have some degree of stiffness. A cloth or flexible material having a slight degree of stiffness and smooth in character is preferred, such as paper-cambric or crinoline. A strip thus prepared may obviously be folded to bring the pictures and flexible sections in superposed position, thereby forming a package or rectangular mass, as seen in Figs. 8, 9, and 10. After such strip has been unfolded in the act of exhibiting the pictures it can be easily and quickly refolded by gathering up the pictures successively in the palm or between the partially-closed fingers of the left hand, the pictures being folded or placed in superposed order one after another by the use of the right hand.

Instead of using separately-applied picture-cards the ribbon or flexible picture-strips could be prepared with alternating stiffened and flexible sections and the pictures transferred to or printed directly upon the picture-strip. The form of picture-strip shown in Fig. 8 may obviously be made by attaching picture-cords upon two narrow ribbons arranged parallel with each other adjacent to the side margins of the cards. The employment of a picture-strip formed, as described, by means of alternately-arranged picture-cards and flexible sections forms an important part of our improvement, for the reason that such strip affords an exceedingly cheap and simple method of producing quick and rapid movement of the pictures in changing the same, combined with a relatively long exposure of each picture in the interval between the operations of shifting the pictures, it being, of course, understood that the longer each picture remains immovable and the quicker the transition or shifting of one picture for another the more natural will be the movement of the persons or objects represented and more satisfactory the general result. Obviously the employment of such a picture-strip enables the pictures to be moved or shifted in the desired manner without the employment of any mechanism except that required for holding the pictures and advancing the package toward the position for projection, and even such advance of the package may be accomplished by a pressure of the hand of the operator instead of by weight or spring actuated means, as hereinbefore described. It follows that the employment of such picture-strip enables satisfactory results to be secured in the production of moving pictures without any mechanical means and by the use of hands alone, inasmuch as the pictures may be shifted into position for projection by one hand and successively withdrawn after exposure by tension applied to

the end of the strip by the other hand. At the same time mechanical devices may with advantage be employed for actuating the picture-strip, and when used they may be of much more simple character than those required for moving the transparent films in prior apparatus heretofore employed for similar purposes.

In Fig. 13 we have shown a simple form of apparatus in the nature of a trough or holder K, arranged with its front end in alinement with the optical axis of the instrument and adapted to hold a series of separate pictures *k k*, each of which is mounted on a separate plate or thick card. Between the end of said trough K and the wall K′ of the lantern-case is located a slot *k*′, only slightly wider than the plates or cards, so that said cards or plates *k* can drop through the same one at a time only. With an apparatus of this kind it is obvious that if the entire mass of pictures be pushed or thrust along through the trough toward the body of the lantern said pictures will drop one by one through the slot *k*′, and the same general result will be secured as arises from the use of the folded picture-strip. In other words, the pictures being superposed or placed one in front of the other each one shortly after it reaches the point of exposure will drop quickly away from its position, thereby leaving a picture behind it in place for similar exposure and affording a maximum time during which each picture remains exposed and in the projecting position, combined with a minimum time occupied in the removal of each picture after its exposure. Obviously in this construction each picture will remain exposed during the length of time required for moving the entire mass of pictures a distance equal to the thickness of one of the plates to which the pictures are secured.

In Fig. 14 we have shown a simple form of mechanical device for actuating a picture-strip of the kinds shown in Figs. 8, 9, 10, 11, and 12. In this instance a tubular holder L is employed, having a bottom wall L′, top wall L^2, and a removable presser L^3. As it is intended to withdraw the picture-strip upwardly from this holder, a slot *l* is provided at the inner end of the upper wall L^2 thereof. Above the holder is located an apparatus comprising a drum M, a smaller drum M′, attached to the same shaft, and a train of gears, (indicated as a whole by M^2,) which train of gears operates a revolving speed-regulating fan M^3. A weight N is attached to a cord *n*, secured to and wrapped around the drum M′, while a similar cord O is secured to the drum M and is connected at its lower end with a picture-strip, (represented by P.) When the cord N is wrapped about the drum M′, the cord O is unwrapped from said drum, and vice versa. The said weight N serves as a means of turning the drum M′, and thereby rotating the drum M, so as to wind the cord O thereon, and thus draw the picture-strip upwardly through the slot L, it being of course understood that the drum M is located at such distance from the apparatus that the entire strip may be drawn out of the holder before its end reaches the said drum M. The fan-regulator M^3 obviously serves to control the rate of movement of the winding device, so as to withdraw the picture-strip at a uniform rate of speed, and thus give uniform shifting movement to the pictures. The strip-actuating device above described and shown in Fig. 14 is, however, only one of many similar devices that may be employed for the same purpose and is herein shown merely as an illustration of one available form of such a device.

We are aware that a projecting apparatus employing reflected light will not give with the same illuminating power a picture or image as sharp and distinct as that obtained by the use of transparent pictures and transmitted light. The employment of opaque pictures in connection with reflected light has, however, such important advantages with respect to cheapness in the first cost of the pictures and ease and convenience in manipulating and moving the series of pictures as to make an apparatus of this kind of great practical utility, it being of course understood that the lack of sharpness or distinctness may be compensated for by the use of an increased amount of light and that the cost of such increased light will be little as compared with the expense involved in the construction of a complicated apparatus, such as has heretofore been used for moving a transparent picture strip or film. As before stated, an important advantage is gained from the construction described by reason of the fact that by its use it becomes possible to employ opaque pictures, so that ordinary photographs or pictures prepared in any other manner may be employed instead of the comparatively expensive transparent pictures heretofore in use in such apparatus. Moreover, an apparatus giving effective results may be made in accordance with our invention of such cheap and simple character as to be sold at a low price and used popularly in private families as a means of instruction and amusement.

It will of course be understood that the means employed for illuminating the pictures may be of any common or desirable form, that illustrated being only one of several well-known devices adapted for the purpose.

As far as the folding picture-strip above described in itself is concerned, it may be used for exhibiting by reflected light a series of ordinary pictures of different objects, as in an ordinary magic lantern, such strip construction affording a convenient means for substituting one of such pictures for another.

We claim as our invention—

1. A picture-strip for projecting apparatus comprising a plurality of picture-sections, and interposed sections of flexible material

which allow the pictures to be placed in overlapped relation when faced in the same direction, said section consisting of narrow parts located at the sides of the strips and affording central spaces through which the pictures are exposed as the strip is unfolded.

2. A kinetoscope comprising a picture-strip which consists of a plurality of picture-sections bearing a series of pictures of the same scene or object and connected by interposed flexible sections of such length as to allow the picture-sections to be placed in overlapped relation when faced in the same direction, supporting means for the folded strip and pressing means acting against the rear of the folded strip when said picture-sections are in their overlapped or folded relation to hold the section which forms the face of the folded strip in position for projection and to advance the rearmost sections as those in front of them are successively removed, the parts being so arranged that the strip may be rapidly unfolded and the picture-sections quickly exposed in succession by drawing upon the forward end of the strip so as to give the semblance of motion in the projected pictures.

3. A kinetoscope comprising a picture-strip comprising a plurality of sections bearing a series of pictures of the same scene or object and connected by interposed flexible sections of such length as to allow the picture-sections to be placed in overlapped relation when faced in the same direction, a magazine adapted to movably support the picture-sections when in their overlapped relation, and pressing means acting against the rear of the picture-strip to hold the picture-section which is at the front face of the folded strip in position for projection and to advance the rearmost sections as those in front of them are successively removed; the parts being so arranged that the strip may be rapidly unfolded and the picture-sections quickly exposed in succession by drawing on the outer end of said strip, so as to give the semblance of motion in the projected pictures.

4. The combination with a projecting apparatus, of a holder adapted to contain a picture-strip, said holder being provided with an exit-slot for the picture-strip wider at its middle than at its end, and a movable presser acting to advance the picture-strip toward the exit-slot.

5. A kinetoscope comprising a holder adapted to contain a folded picture-strip, a wall or plate provided with a picture-opening and to which said picture-holder is attached, said holder being provided adjacent to the wall with an exit-slot, a presser and means for moving the presser toward said opening to advance the folded strip as its outer end is withdrawn through said slot, thereby enabling the picture-strip to be rapidly withdrawn from the holder to expose the pictures on the strip in quick succession and thereby give the semblance of motion in the projected pictures.

6. A kinetoscope comprising an object-lens, a source of light, a reflector in advance of said source of light, a picture-strip holder adapted to contain a folded picture-strip, an inclosure provided with a wall or plate containing a picture-opening in position to be illuminated by rays from said reflector, said picture-holder being secured to the said wall or plate in position to sustain the folded picture-strip against the said opening and being provided with an exit-slot located adjacent to the said wall or plate, a presser and means for actuating the presser acting to advance the same and the folded strip toward the said opening and to bring the pictures on the strip rapidly into place for projection when the strip is drawn rapidly from the holder to successively expose the pictures on the strip and to thereby give the semblance of motion in the projected pictures.

7. A kinetoscope comprising an object-lens, a source of light, a reflector in advance of the source of light, a holder adapted to contain a folded picture-strip, an inclosure provided with a rear wall containing a picture-opening in position to be illuminated by the rays from said reflector, said holder being attached to said wall in position to hold the folds of the picture-strip against said opening and being provided with an exit-slot for the picture-strip located adjacent to said wall, guide-strips on said wall arranged at either side of said opening in position to engage the side edges of said picture-strip, a presser, and actuating means for the presser operating to advance the presser and the folded strip toward the wall as the folds of the strip are rapidly withdrawn from the holder to successively expose the pictures on the strip and thereby give the semblance of motion in the projected pictures.

In testimony that we claim the foregoing as our invention we each affix our signatures in presence of two witnesses, the said GEORGE WATSON SMITH on the 21st day of June, A. D. 1897, and the said WILLIAM A. SOMERS on the 18th day of June, 1897.

GEORGE WATSON SMITH.
WILLIAM A. SOMERS.

Witnesses for Smith:
C. CLARENCE POOLE,
R. CUTHBERT VIVIAN.
Witnesses for Somers:
R. C. WIGHT,
W. J. CONWAY.