No. 670,752.

Patented Mar. 26, 1901.

J. S. WYATT.

STEREOSCOPE.

(No Model.)

(Application filed June 9, 1899.)

3 Sheets—Sheet 1.

FIG. 1.

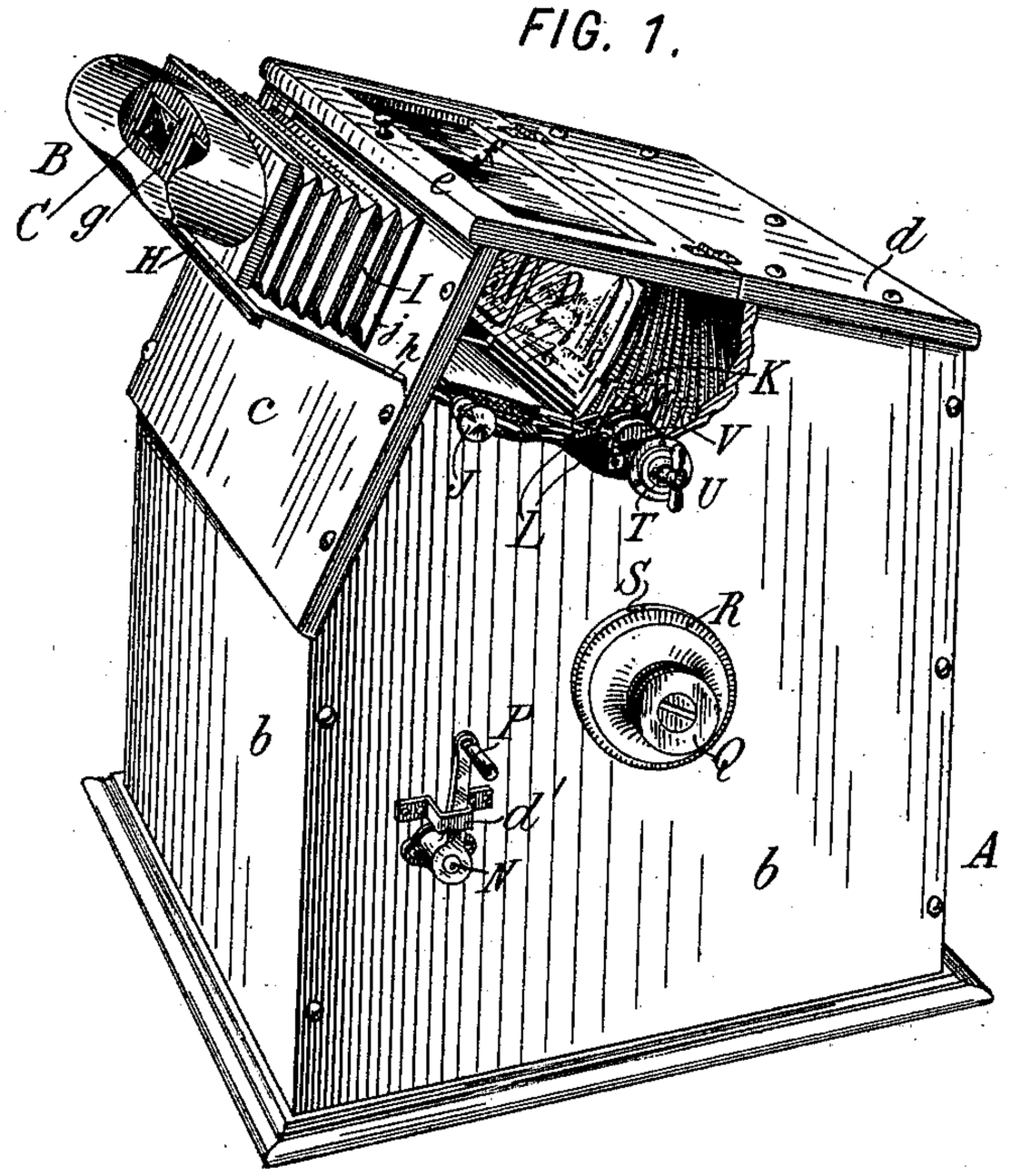


FIG. 2.

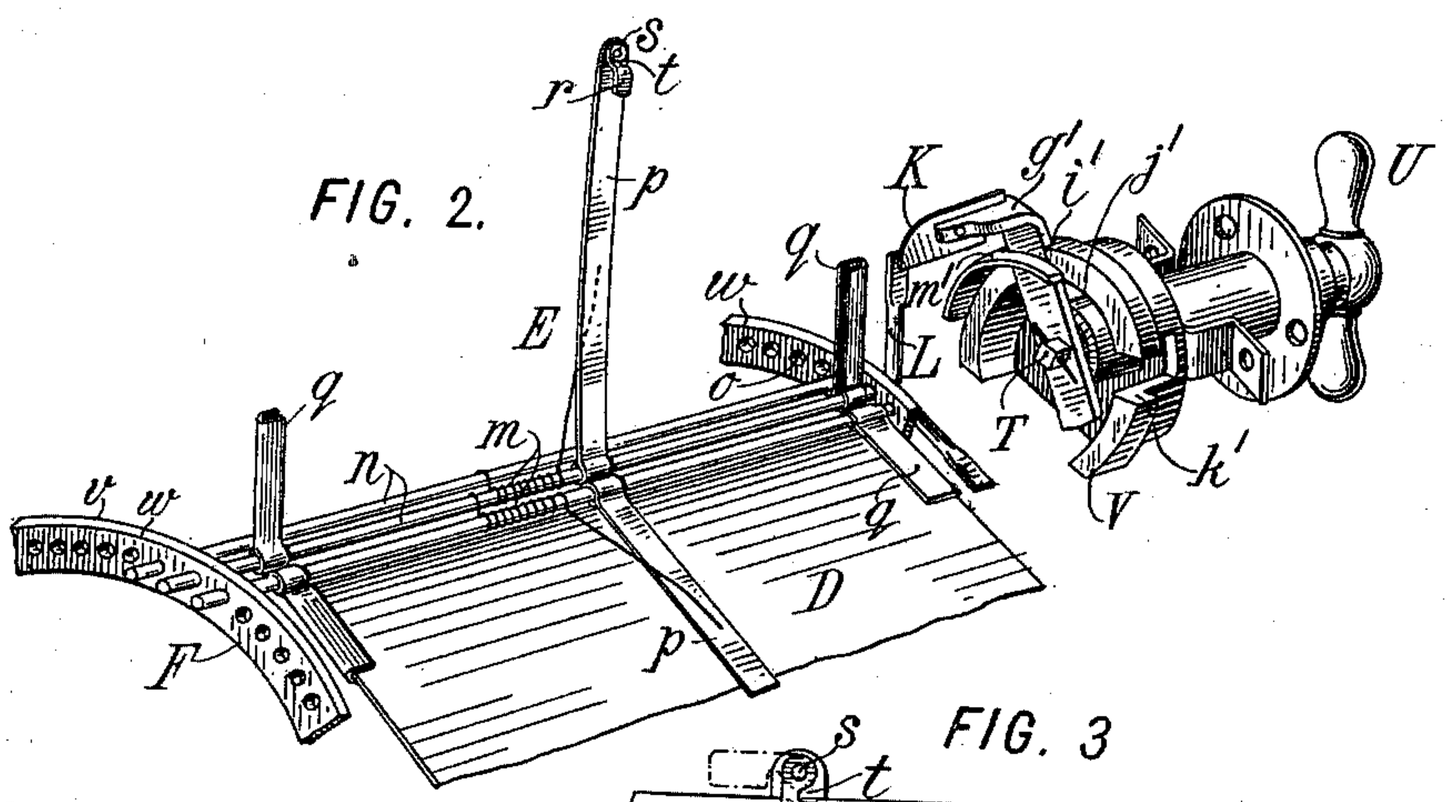
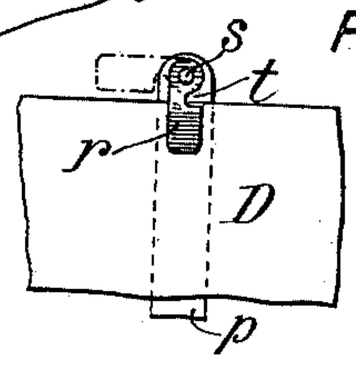


FIG. 3



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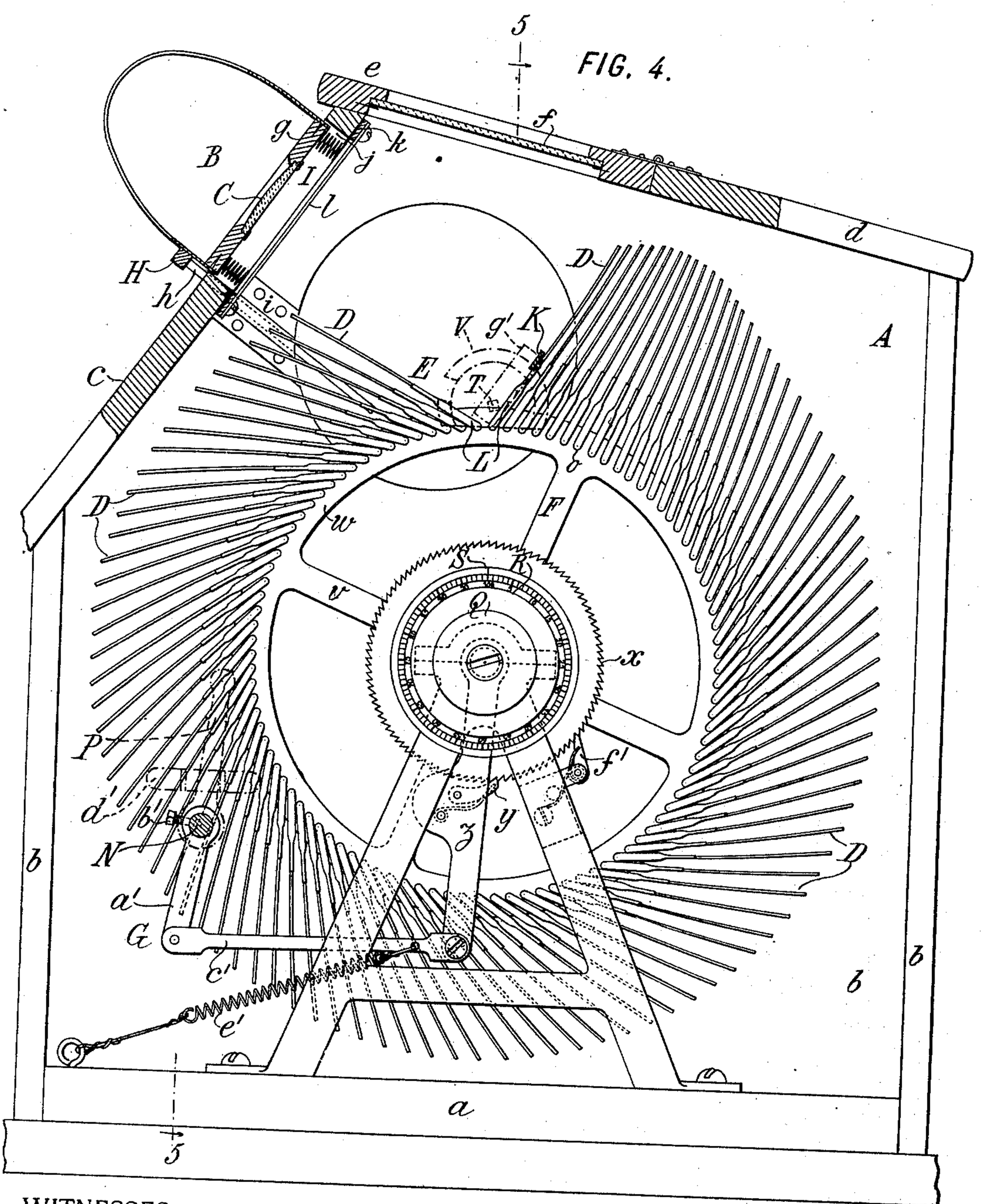
3 Sheets—Sheet 2.

FIG. 4.



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3 Sheets—Sheet 3.

FIG. 5.

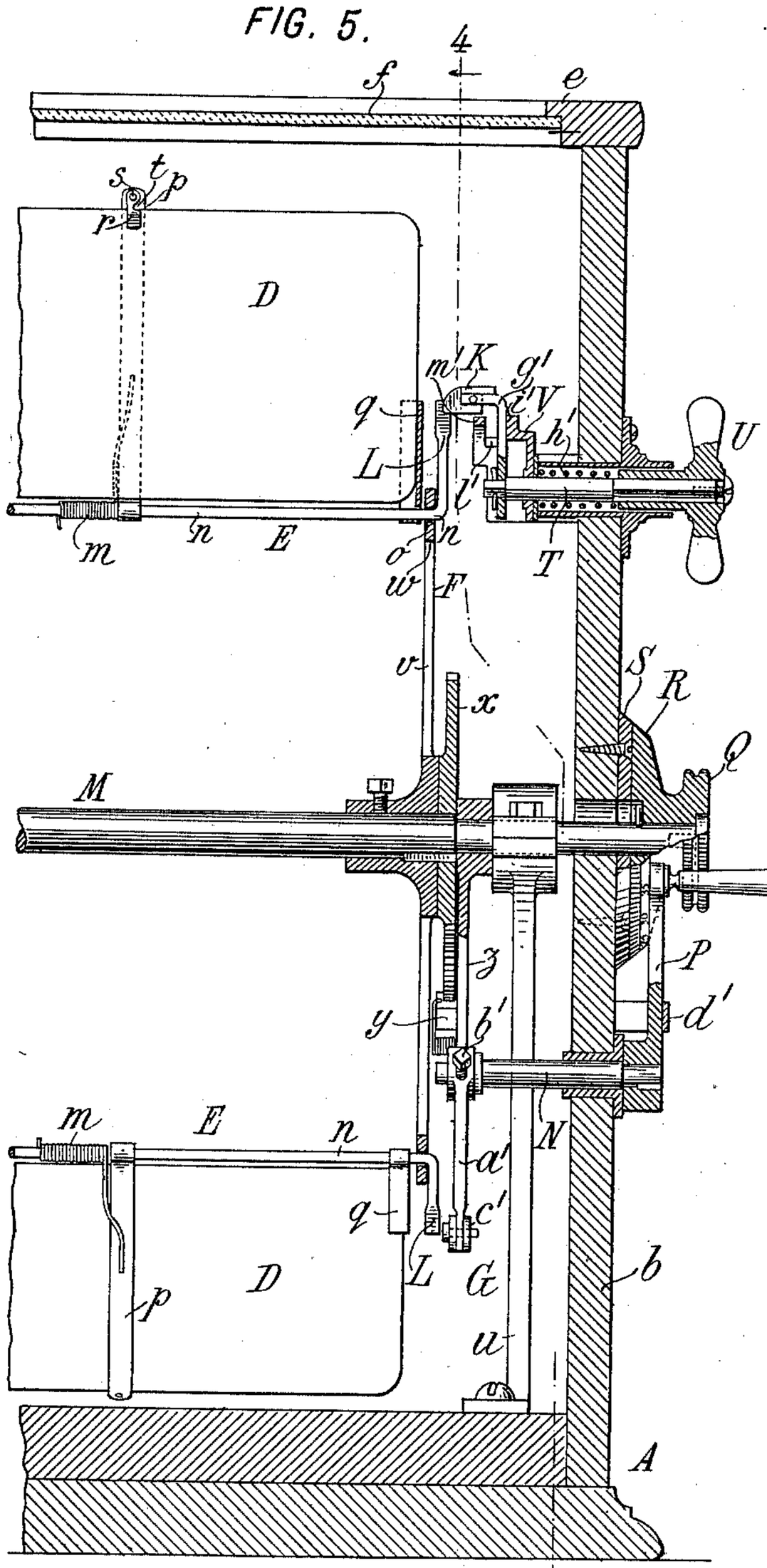


FIG. 6.

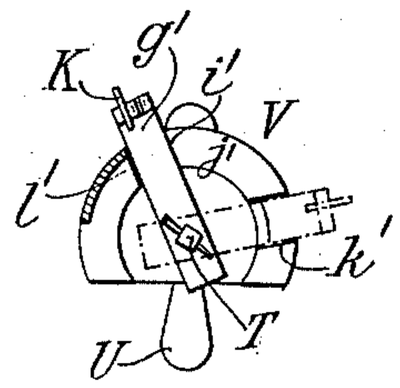
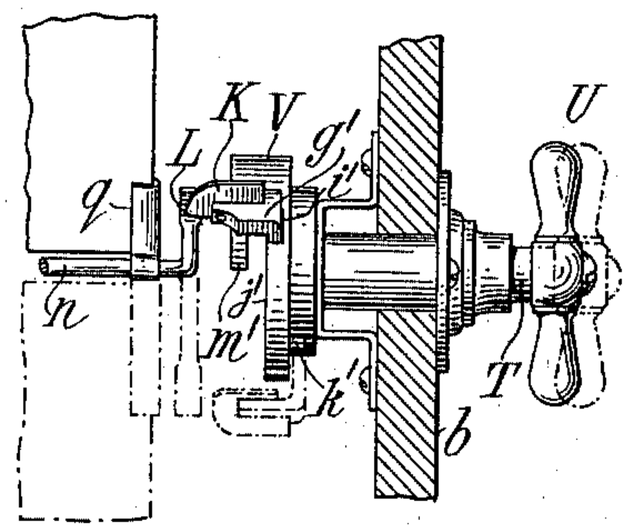


FIG. 7.



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UNITED STATES PATENT OFFICE.

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STEREOSCOPE.

SPECIFICATION forming part of Letters Patent No. 670,752, dated March 26, 1901.

Application filed June 9, 1899. Serial No. 719,906. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. WYATT, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Stereoscopes and other Apparatus, of which the following is a specification.

This invention relates to stereoscopes and similar instruments and apparatus, and aims to provide certain improvements especially applicable to apparatus for the exhibition of pictures or for like purposes.

It has been common in stereoscopes to adjust the picture toward and from the lenses for focusing, and in certain picture-exhibition apparatus it has been the practice to successively present different pictures in front of the lenses by means of intermittently-acting mechanism. The hand-stereoscopes have been tedious of use because of the necessity for manually substituting succeeding pictures for those examined, and most successive-exhibition apparatus is too expensive and cumbersome to be suitable as a substitute for the stereoscope, as well as being difficult to focus and in operation leaving a period between the shifting of successive pictures into position in which the shifting movement has been disagreeably noticeable to the user.

My invention aims to provide a stereoscopic picture-exhibition apparatus in which a series of pictures can be successively displayed either at predetermined intervals or at will, in which the user can readily focus the instrument, in which the shifting of the pictures shall be sufficiently rapid to make their movement unnoticeable, in which each picture shall be in the proper position relatively to the lenses from the time it becomes visible, in which any picture of a series can be selected and readily exposed, and which can be manipulated by the user without withdrawing his eyes from the lenses and without particular care or attention.

The invention also aims to provide a stereoscope of improved construction which shall be cheap, light, compact, and convenient in construction and form and which is suited to the successive display of the various pictures going to make up what is known as a "trip" or "collection" of stereoscopic photographs.

To these ends in carrying out the preferred form of my present invention I provide an improved construction of picture-holder, improved shifting mechanism, improved means for holding the lenses and for focusing, a selector, and certain other features of improvement, all of which will be more fully hereinafter set forth.

In the accompanying drawings, which show the preferred form of my invention, Figure 1 is a perspective view of my improved stereoscope, the wall being partly broken out to show the interior. Fig. 2 is an enlarged fragmentary perspective view of the picture-holder and trip. Fig. 3 is an enlarged fragmentary view of the picture-fastener. Fig. 4 is an enlarged sectional side view showing the interior of the apparatus, partly cut on the line 4 4 of Fig. 5. Fig. 5 is a fragmentary vertical section of Fig. 4, cut approximately on the line 5 5 and looking in the direction of the arrow. Fig. 6 is an inner face view of the trip, and Fig. 7 is a fragmentary sectional view showing the trip in plan.

Referring to the drawings, let A indicate the casing, B the hood, C the lenses, D the pictures, E the picture-holders, F the picture-carrier, and G the operating mechanism, for my improved stereoscope.

The casing A preferably consists of an inclosing box or cabinet having a base *a*, vertical front, rear, and side walls *b*, an inclined front wall *c*, an inclined top wall *d*, and a hinged cover or door *e*, having a translucent glass window *f*.

The hood B is the usual hood for the lenses of a stereoscope surrounding these lenses and having a suitable contour at its edge to fit against the face of the user and constitute a dark chamber in front of the lenses, for which purpose the interior of the hood is blackened. The hood is constructed with the usual lens-frame *g*, on which the hood proper is secured and in apertures through which the lenses are mounted.

The picture-holders are provided in sufficient number to correspond to the maximum number of pictures which the installation is

to exhibit. Each holder is adapted to hold its picture in position opposite the lenses and to shift it out of the line of vision when the succeeding picture is to be seen.

The carrier supports and moves the picture-holders to bring them successively into the line of sight, and the operating mechanism moves the carrier. The carrier is preferably an endless intermittently-traveling member, as a revolving wheel or drum, and the holders are preferably pivoted to it near its periphery.

The operating mechanism preferably feeds the carrier manually and intermittently to expose successive pictures when desired, so that the user can determine at will the duration of exposure of each view.

Having thus generally disclosed the nature and operation of the improved device, I will now describe in detail the features of construction and operation of the preferred form of my invention in the embodiment thereof illustrated in the drawings.

For focusing I provide for relative adjustment between the lenses and pictures, preferably accomplishing this by making the lens-holder movable toward and from the pictures, as by mounting it on the shaft or slide H, which crosses the front of the casing and has arms *h*, movable through slideways *i* at opposite sides of the pictures and clamped in position by a clamp J at one side of the machine, so that the lenses can be set and locked at any point. In order to permit a very short focus and obtain compactness, I provide an improved septum *l* for the lenses and an improved connection between the lenses and the casing. The septum preferably consists of a stationary cross piece or bar fixed on the inner side of the wall *c* and crossing the lens-hole *j* through this wall midway between the two lenses C, which bar is preferably painted black and is of sufficient width to constitute a suitable septum at any adjustment of the lenses relatively to the pictures. By thus making the septum stationary it will be seen that the lenses may be moved very close to the pictures without this close adjustment causing the septum to in any manner interfere with the movement of the pictures, and the relation of the septum to the pictures is always the same, no matter what is the adjustment of the lens-frame.

The connection between the lens-frame and the casing preferably consists of a bellows *i*, fastened at its inner end to the wall *c* and at its outer end to the lens-frame *g* and adapted to expand and collapse with the adjustments of this frame, so that in all positions of the lenses the bellows constitutes a dark chamber at the inner side thereof. For compactness the hole *j* through the wall *c* is made large enough to receive the bellows and preferably also the lens-frame and the inner end of the hood, and the inner end of the bellows is fastened against the inner face of the wall *c* by a frame or strap *k*, so that the lens-frame may be pushed in the lens-hole until the bellows is completely collapsed and the lenses are flush with the inner wall of the casing. To permit this, the shaft H is connected to the hood at a sufficient distance outwardly of the inner end of the hood, as shown in Fig. 4, the hood being shown as completely encircling the lens-frame at bottom to afford a surface for engaging the cross-piece of the shaft, as well as to fit the nose and cheeks of the user.

The hood and bellows constitute dark chambers at opposite sides of the lenses, and the light is thrown on the pictures through the window *f* above, so that the user may readily select any focus without changing the relation of the source of light to the picture and without materially affecting the double dark chambers or the relation of the septum to the picture, thus giving a great scope for adjustability, while heightening the illusion of reality.

To avoid the disagreeable impression caused by the visible disappearance of one picture prior to the exhibition of another, my invention provides means for instantaneously shifting a picture out of the line of sight or for so rapidly doing this that its movement will not be disagreeably conspicuous to the observer. Any suitable means may be utilized for this purpose; but I prefer to hold the picture while being viewed under tension positively against a detent, trip, or stop, so that the instant the picture is released the tension will at once remove it from view. I prefer to use a stop or projection K on the case and a finger or projection L on each picture-holder E for this purpose and a coiled spring *m* for throwing the picture out of position as soon as the stop and finger are disengaged, to permit which the picture-holder is movably and preferably rotatively mounted on the picture-carrier F. The stop K is located at a suitable point relatively to the projection L to hold the picture carried by the holder E, to which such projection is fixed exactly in position for exhibition, and the spring *m* presses the projection of the holder firmly against the stop, so that, the stop being rigid and the projection being fixed relatively to the holder, the picture is held absolutely stationary and immovable during all the time that it is exposed to view. The holder is shown as swiveled on a horizontal axis or shaft *n*, mounted in a hole *o*, so that the holder is free to swing forward around this axis under the tension of the spring *m* as soon as the holder is released by the stop. The plurality of holders when mounted on the carrier in this manner in such proximity as shown are sufficiently close together for permitting one end of the spring *m* of one holder to be hooked over the shaft *n* of the next holder, so that one end of each spring reacts against an adjacent shaft, while the other end of the spring reacts against the picture-bar *p* of the holder to which the spring pertains.

Each holder is shown as of improved construction, consisting of end socket-pieces *q*

for receiving a picture, an intermediate picture-bar p, projecting radially back of the picture, and a latch r for catching over the top edge of the picture. The latch is movable, as by being hinged on a pin s, so that it can be swung downwardly to lock a picture in the holder or upwardly to release it. Its edge is cut away at t to prevent cutting of the edge of the picture when the latch is moved to the closed position. It will be seen that this construction of holder is extremely light, simple, and compact, thus reducing the inertia to be overcome in suddenly removing a picture from view, while enabling a great number of pictures to be assembled and manipulated in a very small space.

The picture-carrier F may be any suitable device for carrying a plurality of relatively movable picture-holders. I prefer to use the drum or wheel construction shown, in which the carrier is essentially cylindrical and is mounted to revolve on an axial shaft M, on which it is preferably fixed, the shaft being shown as mounted revolubly in bearing-brackets u. By this construction the movement of the carrier can be utilized when the stop K is stationary as the means for disengaging the latter from the stop, as shown, the action being the withdrawal of the projection L from underneath the stop K with the forward movement of the carrier. The carrier shown consists of two end wheels v, connected by the shaft M, and each having its rim w provided with a number of bearings o, corresponding to the number of holders to be used. These bearings may be of any suitable construction to engage and movably hold the holders. As shown, the bearings are mere perforations through the rim, through which perforations the shafts n of the holders pass, these shafts being held in place axially by any suitable means, as by means of the socket-piece q, fixed on the shaft at one side of one rim, and the upturned end of the shaft constituting the projection L at the other side of the same end. Such movement of the carrier as is desired may be transmitted to it in any suitable way. I prefer to provide for its intermittent step-by-step movement by suitable mechanism, employing, preferably, the operating mechanism G therefor, which, as shown, consists of a ratchet-wheel x, fixed on the shaft M, and a pawl y, engaging the ratchet and carried by a swinging lever z, fulcrumed on the shaft M and oscillated from a driving-shaft N through the medium of an adjustable arm a', set on the shaft N by a screw b', or otherwise, and connected to the lever z by a link c'. The number of teeth on the ratchet x corresponds to the number of holders E, and the pawl is adapted to feed the ratchet forward one tooth at a time, so that with each operation of the ratchet one holder will be released from the stop K, thus permitting the picture carried thereby to be thrown out of view and causing the following picture to be exposed. Any suitable means for gaging the travel of the pawl may be employed—as, for example, the double stop d', embracing the handle P of the driving-shaft N, so as to limit the oscillation of this handle. The driving-shaft N may be operated by any motor; but in order to enable individual control of the length of the period of display for each picture I prefer to provide for controlling movement of the carrier manually and to operate the driving-shaft by hand, and to this end I fix on the shaft the handle P at a point convenient to the reach of the user. Pulling the handle toward the front until it is arrested by the front part of the stop d' moves the carrier forward sufficiently to release one holder from the stop K, and releasing the handle permits the driving mechanism to restore itself until the handle is arrested by the rear portion of the stop d', the restoration being effected in the construction shown by a spring e', connected at one end to the link c' and at the other end to the casing and serving to draw the lever z back sufficiently to engage a following tooth of the ratchet. To prevent reverse turning of the carrier, I provide a locking-pawl f', which snaps behind a tooth of the ratchet just previous to the completion of the driving movement of the pawl y. The excessive forward movement of the carrier is prevented in the construction shown by the stop K, projection L, and spring m of the adjacent picture-holder, which is engaged as soon as one is released. The instant one projection L escapes from the stop K the following projection snaps against this stop under tension of its spring, so that feeding of the carrier is resisted by the spring of such holder and by those of the several succeeding holders, which are slightly displaced by reason of the position in which the picture being exhibited is held during engagement of the projection of its holder with the stop K, as best seen in Fig. 4. Thus enough resistance is offered to forward feeding to avoid an excessive movement and to prevent a too-rapid movement of the carrier, while this resistance is kept within such limits that it offers no noticeable or serious impediment to the operation by the user.

In addition to the means for intermittent driving of the carrier I provide means for its continuous movement, so that the user can rapidly throw the carrier around until a certain portion of the pictures carried by it is in line with the lenses. This is accomplished in the construction shown by extending the shaft M through the side wall b and providing it with a driving-handle Q, connected to rotate with the shaft, by means of which handle the user can at any time turn the carrier to any desired extent and with any speed, observing the pictures through the lenses in the meantime, if desired. At any stage in such turning the handle Q can be released and the carrier progressed step by step by the handle P, or the handle Q can be turned rapidly

until the pictures to be observed are exposed, and then it can be turned gradually to obtain the desired period for inspection of each picture, the pictures snapping past the stop K in the same manner as though the handle P were employed, if desired. In this way one can very quickly arrive at any portion of the series of pictures going to make up what is known as a "trip" series—that is, a succession of pictures relating to succeeding portions of a certain locality or trip or route of travel.

In many collections of trip-pictures it is customary to furnish the descriptive indexes and number the pictures, and while the pictures can be conveniently exposed successively by the intermittent operating mechanism or can be seen as numbered in front of the lenses by the handle Q for continuous or uninterrupted operation my invention also provides for the exact and immediate selection of any numbered picture of a group independently of the operation of these two mechanisms, so that the user by noting the number of the picture he wishes to see can at once select and expose such picture. The preferred means for doing this comprises an indicator and selector, the indicator shown consisting of a graduated and numbered disk flange R, fixed on the shaft M and having graduations corresponding in number to the number of holders in the carrier, and an indicating ring or point S, fixed on the side wall *b* and having a mark reciprocal to the graduations of the disk, the mark and graduations being so located relatively to the holders that when any numbered graduation coincides with the mark the correspondingly-numbered holder or the correspondingly-numbered picture, if the pictures alone are numbered, will rest in position for exposure in front of the lenses. Thus by the indicator the user can bring any picture to position without the necessity for close observation of the preceding pictures during the necessary movement of the carrier. To facilitate movement of the carrier in thus selecting a picture and to reduce resistance and wear, I provide for disengaging the stop K from the projections L during any movement of the carrier in which successive exposure of the pictures passing the stop is not desired and for reëngaging these parts as soon as it is necessary that they should resume their normal functions. As a simple expedient for effecting this I make the stop movable into and out of the path of movement of the projections. I also utilize the stop as a selector in conjunction with the indicating provisions just described, causing the stop to pick out the particular picture positioned by the indicator and to throw this picture into and hold it at the proper position for observation. To do this in the construction shown, where the holders are all thrown inwardly by their springs as soon as the stop K is removed from the path of the projections L, I provide a double movement for the stop, causing it not only to move out of engagement with the holders, but also to move to such point that when it is restored to engagement with the holders it will pick out and expose the holder indicated by the indicator to be the one in position to be viewed and which, provided the carrier has been stationary since the stop was disengaged, will be the identical picture which was exposed by the stop prior to disengagement of the latter. The means shown for doing this are preferred for the purpose, and consist of an axially-movable oscillating shaft T, carrying an arm g', on the end of which the stop K is carried, a selector-handle U for manipulating this shaft, a spring h', and a holder V. The holder V has a notch i', in which the arm g' fits and is held when the stop K is in proper position for engagement with the projections L, as best seen in Fig. 2. The spring h' presses against the hub of the handle U, and this pushes the arm g' outwardly until it is seated in this notch i'. Inwardly of the notch i' the holder has an inwardly-projecting face j', at the lower part of which it has a deep outwardly-extending notch k'. Pressing the handle U inwardly until the arm g' is free from the notch i' permits turning of the handle, so that the arm rides down the face j' until it reaches the notch k', into which the arm can pass as soon as inward pressure on the handle is released. The notch k' permits the arm to snap outwardly sufficiently for the stop K it carries to pass outwardly of the path of movement of the projections L, whereupon the stop is disengaged from these projections and the carrier can be revolved freely without the pictures being exposed and without the resistance of the springs m, which is exerted when the holders are caught by the stop. The notch k' is located at such a point that the stop does not leave the path of the projections until the holder engaged by the stop has turned down onto the next preceding holder and reached its fully-collapsed position, and the notch does not permit rotation of the stop until the stop has been moved inwardly far enough to again pass between the two projections in front of the notch and engage itself in front of the projection of the holder carrying the picture corresponding to number shown by the indicator to be the one in position for exposure. Should the stop simply be disengaged and then reëngaged without movement of the carrier, the stop would reëngage the holder from which it was disengaged. To reëngage the stop, the handle U is pushed inwardly until the arm g' is free from the notch k'. Then the handle is turned upwardly until the arm g' strikes the top wall l' of the holder V, whereupon on releasing inward pressure on the handle U the spring h' will throw the arm g' outwardly into the notch i' and will hold it there, thus insuring the location of the stop in the proper position. I prefer to add a guard m' at the inner

side of the holder V, so that an undue extent of inward movement of the handle will be resisted.

In use the carrier will be fully or partially charged, according to the number of pictures in any collection, the lens will be adjusted by each user to the focus desired, and the pictures may be viewed at will in the manner explained. If the indicator and selector are employed, the pictures or the holders will be numbered and the pictures will be arranged in their numerical order, so that the user can immediately select and expose any picture. In such case an index or descriptive pamphlet can be conveniently utilized in connection with the exhibition, or different pictures can be quickly selected from time to time, as referred to in an article of which they may be illustrative. By turning back the window-cover any or all of the pictures can be readily removed and others substituted, so that the apparatus can be used for displaying successive trips or groups of pictures, or the collection can be modified from time to time as changes become desirable.

It will be seen that this invention provides an improved picture-exhibition apparatus which can be operated by any person and is of great scope and adaptability and one in which the picture to be examined is in position for inspection prior to its exposure to the gaze and is held immovably during such exposure, so that there is nothing to impair the illusion of reality or to cause disagreeable impression or distract the gaze or attention during use. The importance of immediately removing an examined picture with sufficient rapidity to make its removal unnoticeable and of at the same time holding the picture to be viewed immovable will be readily appreciated. Great compactness is attained by folding down all of the holders except those in immediate proximity to the position for exposure and in using a stationary septum with adjustable lenses.

It will be seen that my invention provides many features of improvement in the principles of the construction and operation of stereoscopic and picture-exhibition apparatus and the like and that these are variously and advantageously applicable, and it will be understood that the invention is not limited to the particular details of construction, operation, or combination of features set forth as constituting its preferred form, since it can be employed in whole or in part, according to such modifications as circumstances or the judgment of those skilled in the art may dictate without departing from the spirit of the invention.

What I claim is, in picture-exhibition and analogous apparatus, the following-defined novel features and combinations, substantially as hereinbefore set forth, namely:

1. In a picture-holder, the combination with a pivotal bar having socket-pieces fixed thereto for receiving the picture, of a lock for holding the picture therein pivoted to said holder.

2. In a picture-holder, the combination with a member having socket-pieces for receiving a picture and preventing endwise displacement of said picture, of a pivoted lock *r* connected to said member for engaging the edge of the picture.

3. In a picture-holder, the combination with socket-pieces for receiving the picture and preventing endwise displacement, of a swinging lock for engaging the edge of a picture, having a recess *t* to avoid cutting the edge of the picture during movement of the lock.

4. The combination with a plurality of picture-holders, and a carrier therefor, said holders movable relatively to said carrier, of an indicator indicating the positions of the respective holders, means for moving the carrier to bring any holder to a predetermined position, means for holding the individual holders in exhibition position, and means for moving said holding means into inoperative position during the operation of said indicator.

5. The combination with a plurality of picture-holders movable relatively to one another, and means for moving them into and out of exhibition position, of a selector comprising a part for moving into the path of a holder for engaging it and moving it into such position, and holding said holder in exhibition position.

6. The combination with a plurality of picture-holders movable relatively to one another into and out of an exhibition position, of an indicator disclosing the location of the holders respectively, a selector comprising a part for moving into the path of a holder for engaging it and moving it to the exhibition position, and holding said holder in exhibition position.

7. The combination with a plurality of picture-holders, of a carrier for said holders, means for moving the carrier, a stop for holding the holders successively in an exhibition position, and means for disengaging such stop, so that the carrier can be moved to a predetermined position without operation of the stop.

8. The combination with a plurality of independently-pivoted picture-holders, pivots for said holders, each having a projection, of a movable carrier to which such holders are pivoted, a stationary stop engaging the projection of successive holders for arresting a holder to hold it in an exhibition position, and means for moving said carrier, whereby as the carrier moves the holders are successively disengaged from said stop by the passage of their projections inwardly thereof, and each is then free to turn on its pivotal axis and move out of position for exposing a succeeding holder.

9. The combination with a plurality of picture-holders movable on a carrier toward and

from an exposure position, of a movable carrier carrying said holders, means for moving said carrier, a stop past which said holders are successively drawn with the movement of the carrier, means for disengaging and reëngaging said stop with the holders, said stop movable during reëngagement from the collapsed position to the exposure position of the adjacent holder, thereby insuring engagement with a predetermined holder when the stop is thrown to the active position.

10. The combination with a revolving carrier for holding a plurality of pictures and maintaining them in an exhibition position, said pictures movable in said carrier, of a casing, a shaft for said carrier, said casing and shaft carrying, the one a point and the other a graduation coinciding with said point, said graduation corresponding to the pictures to be carried by the holder, and said point indicating on said graduation the one of said pictures in the exhibition position, and a stop for engaging each of said holders movable out of operative position during movement of the carrier, and means for so moving said stop.

11. The combination with a movable carrier having a plurality of bearings, of a plurality of picture-holders pivoted in said bearings, pivots for said holders, springs for swinging said holders toward said carrier, projections on said pivots, a stop outwardly of the path of the projections of the inwardly-swung holders and in position for engaging the projection of an outwardly-swung holder, and means moving said carrier relatively to said stop, whereby as the carrier moves the projection engaged by the stop is turned out of engagement therewith, and its holder is then turned inward while the projection of the next holder is simultaneously engaged with the stop.

12. The combination with a plurality of picture-holders, of a stop for engaging one of said holders, means for moving said stop into and out of engagement therewith, and means for locking said stop in its active position.

13. The combination with a plurality of picture-holders, of a stop for engaging one of said holders, means for moving said stop into and out of engagement therewith, means for locking said stop in its active position, and means for holding said stop in its inactive position.

14. The combination with a plurality of picture-holders, of a stop for engaging said holders movable toward and from the latter, and movable at right angles to its said movement to move the holder engaged to a predetermined position.

15. The combination with a plurality of picture-holders, of a stop K for engaging such holders, a handle for moving said stop having an axial and an oscillatory movement, an arm g' connecting said stop and handle, and a frame V for holding said arm in position.

16. The combination with a stop K, of a handle U therefor having an axial and an oscillatory movement, a frame V for holding said stop in two positions, and a spring for resisting displacement of said stop.

17. The combination with a stop K, of an arm g', a frame V having a portion l' for holding said stop in one position, a portion k' for holding said stop in another position, and an intermediate face j' communicating between said portions.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN S. WYATT.

Witnesses:
GEORGE H. FRASER,
THOMAS F. WALLACE.