

[54] **SLIDE PRODUCTION PROCESS AND APPARATUS**

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[51] Int. Cl. **G03b 27/62**

[58] Field of Search **355/75, 77, 40, 74, 78, 72; 40/152**

[56] **References Cited**

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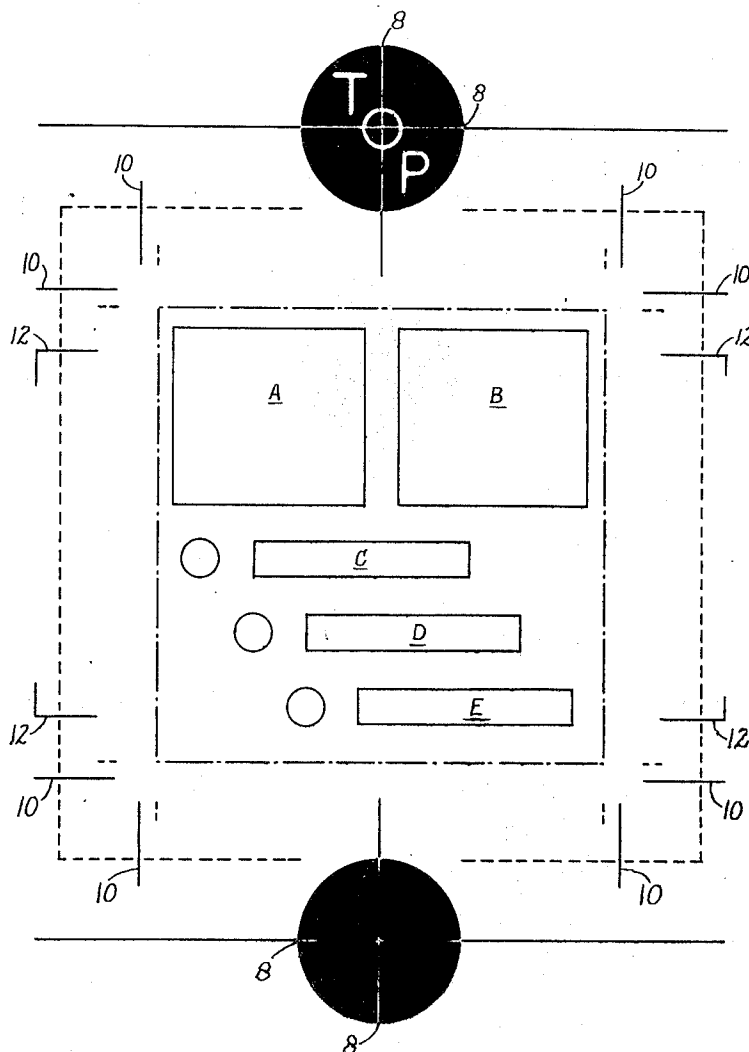
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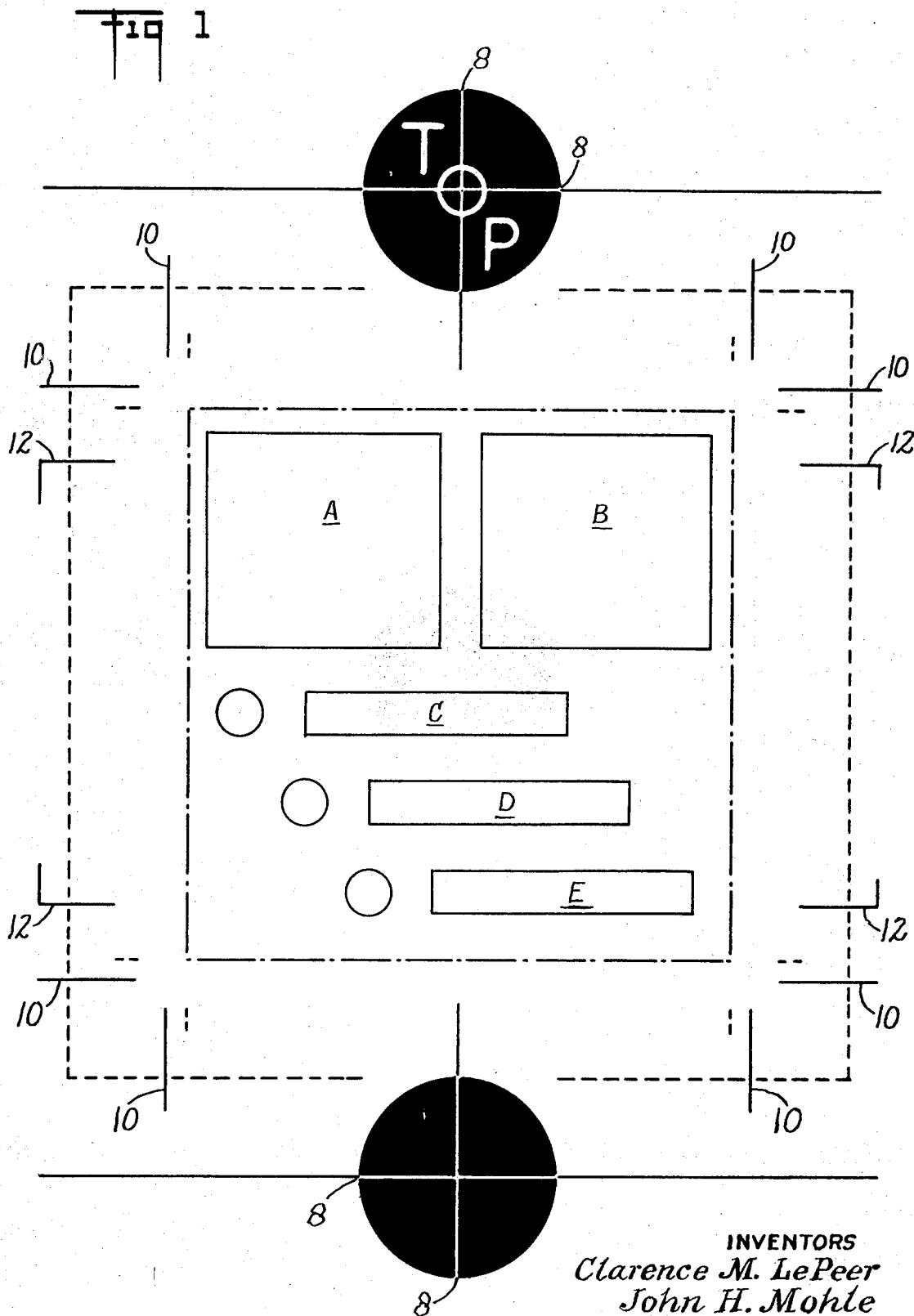
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[57] **ABSTRACT**

A principal embodiment of the invention disclosed herein is a process for producing photographic slides which, as a consequence thereof, can be separately projected onto a screen in an overlapping manner with images common to both slides in precise registry. The process consists of preparing artwork, such as graphs, diagrams, charts and the like on a specially prepared format and photographing the work. The resulting film is then critically positioned in a device according to markings therein which correspond with markings on the format. The device known as a registration device constitutes another embodiment of the invention. The film is then punched and trimmed in the device, and thereafter mounted on a mask according to its markings whereupon the thusly mounted film is inserted in the usual carrier employed in slide projectors. The device, which is hereinafter designated a registration device, is deemed part of the invention. Alternatively, the invention comprehends slide carriers of unique construction in which the film that has been punched and scored for trimming in the registration device according to the process may be directly inserted into the carriers, the construction thereof being such that the step in the process of mounting the film onto a mask is eliminated.

3 Claims, 14 Drawing Figures





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Fig 2

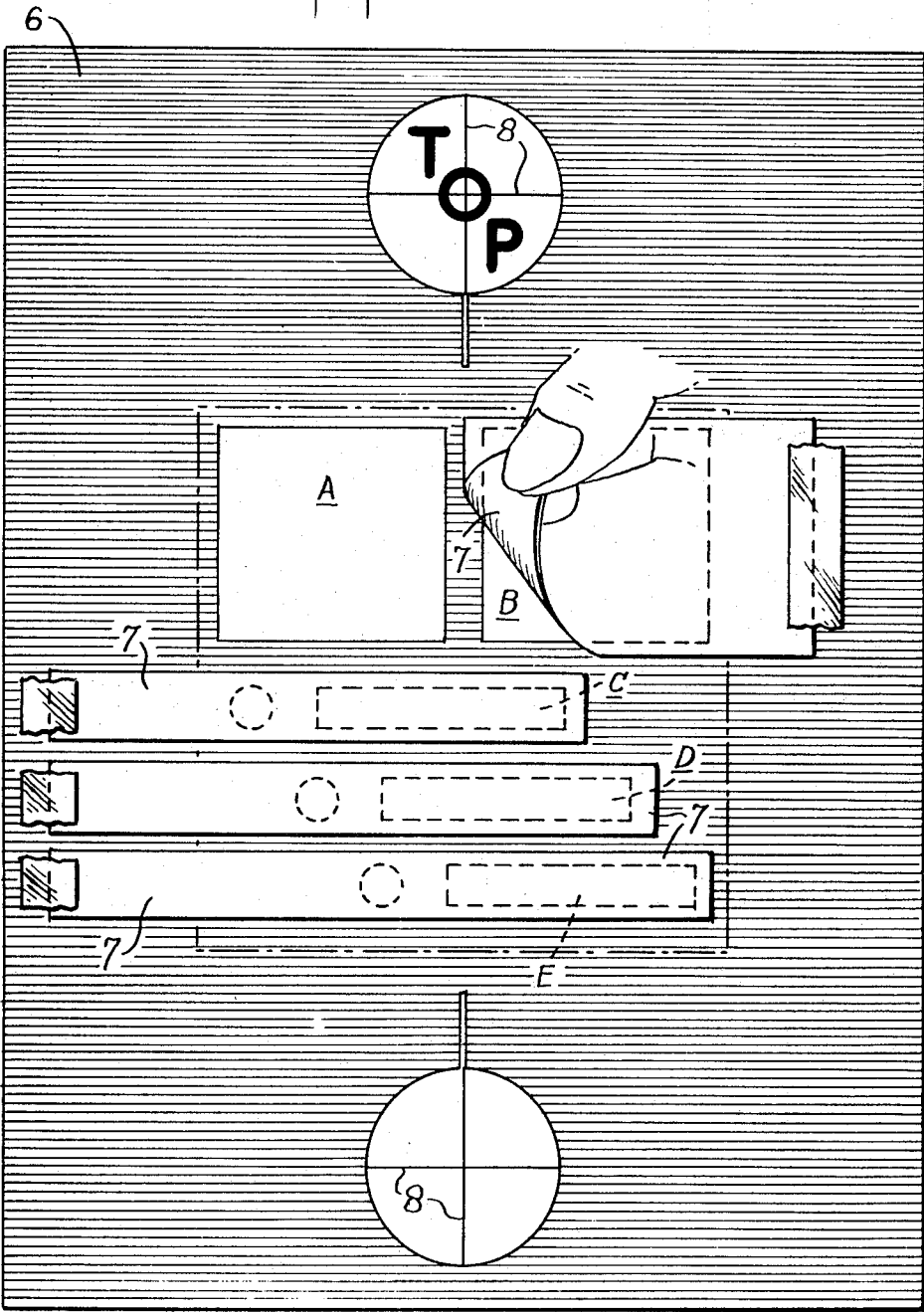
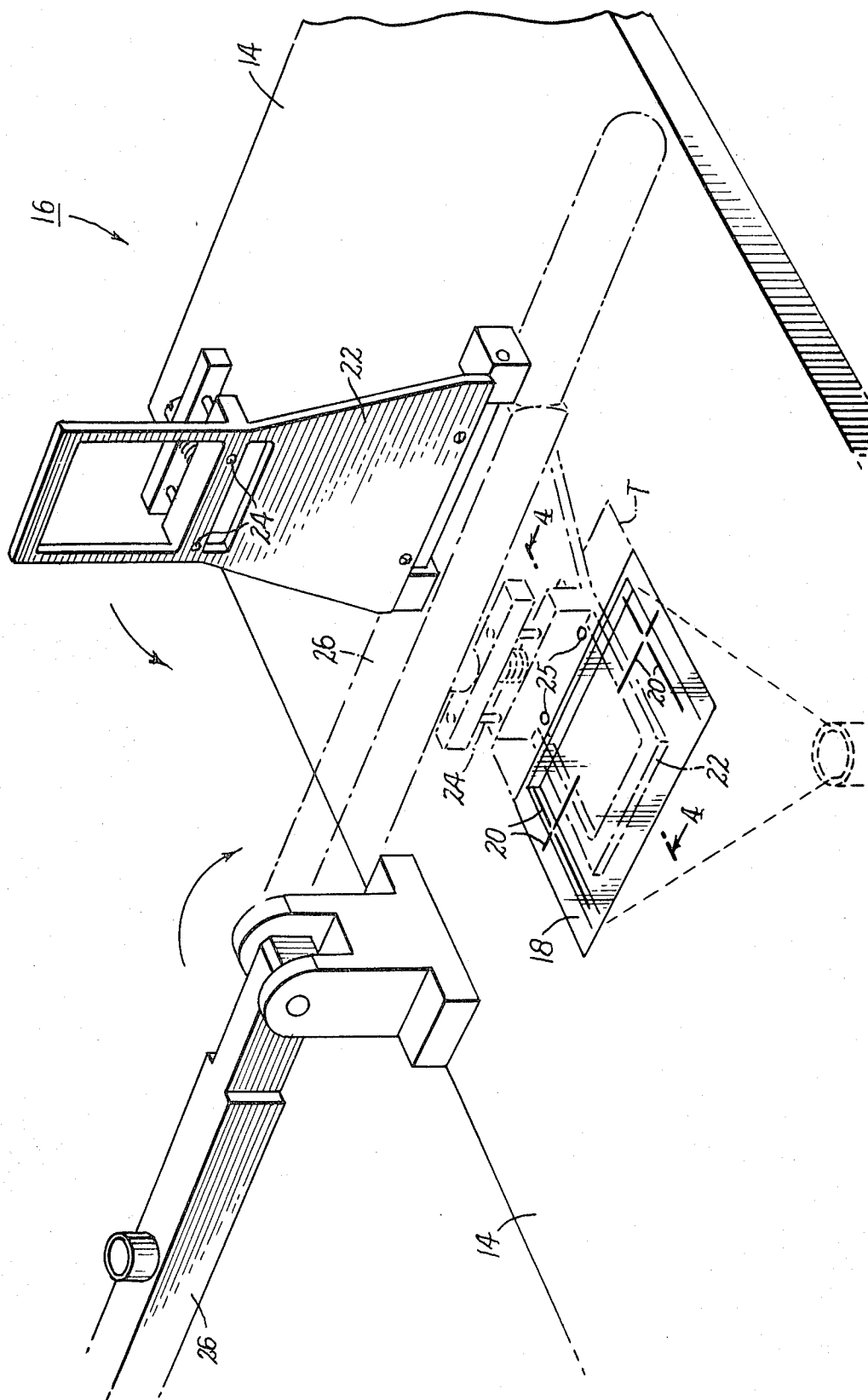
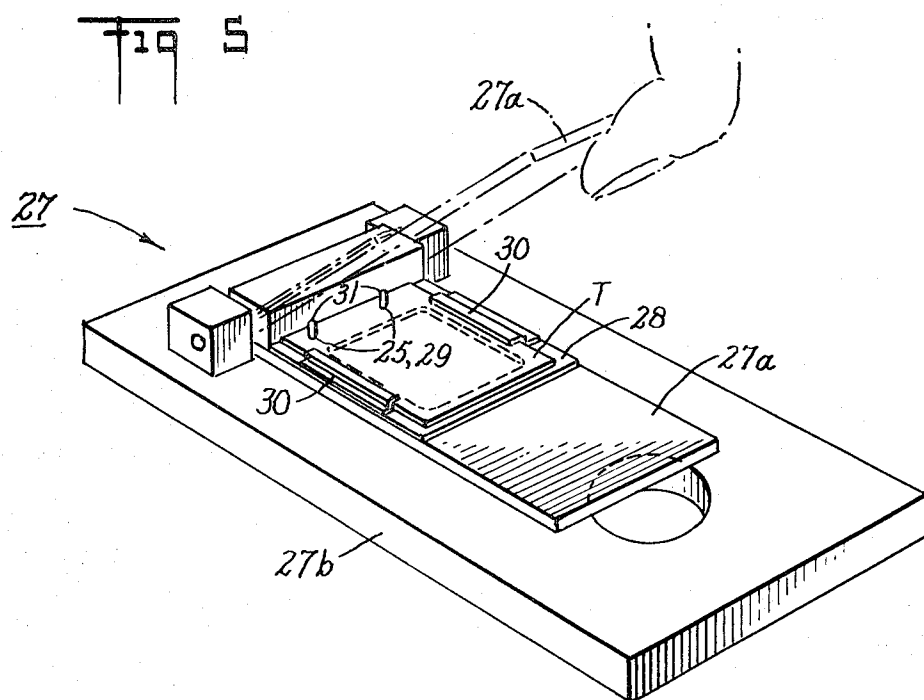
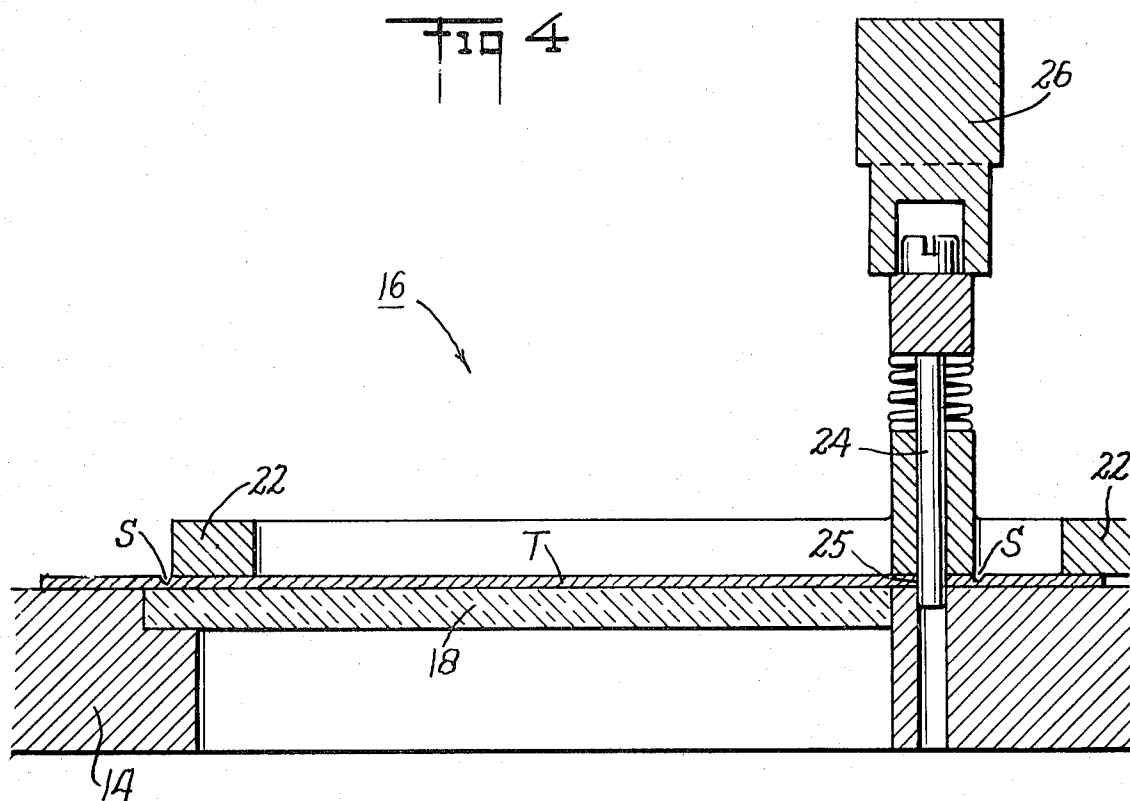
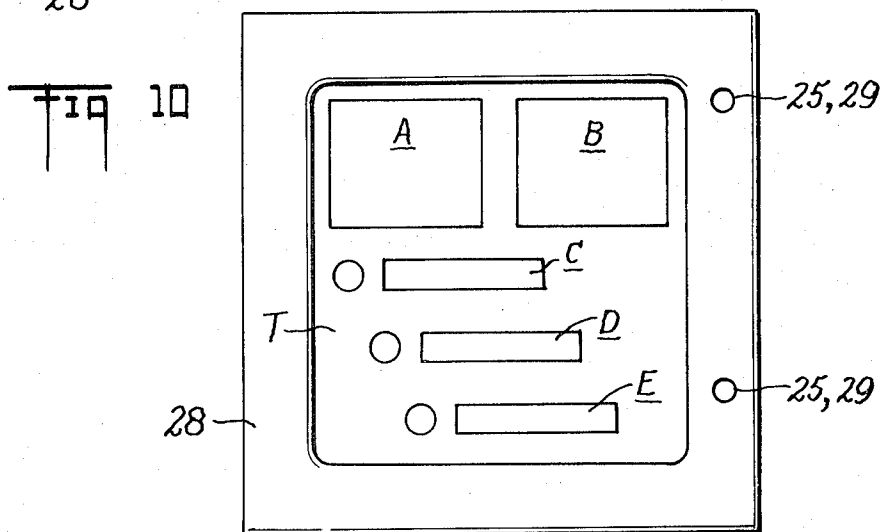
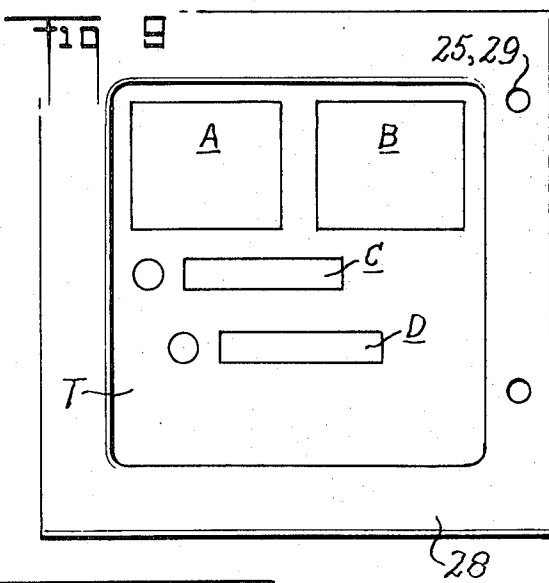
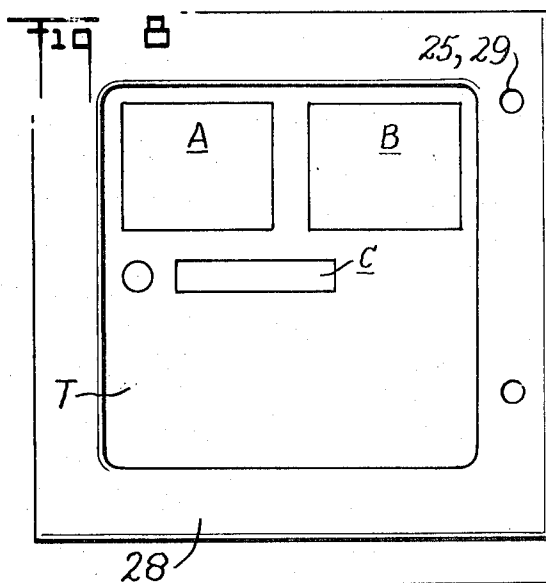
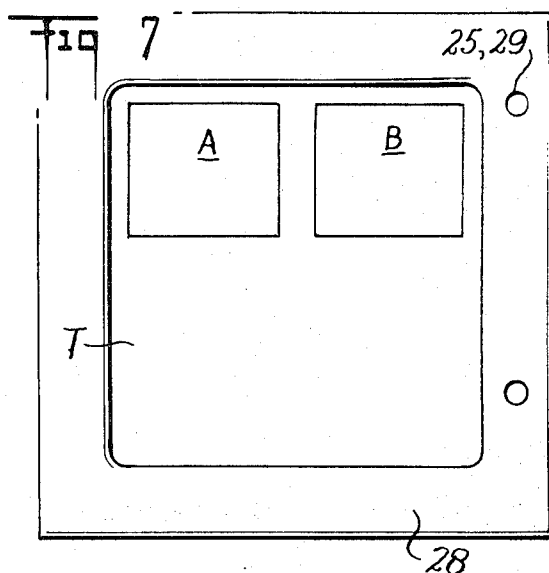
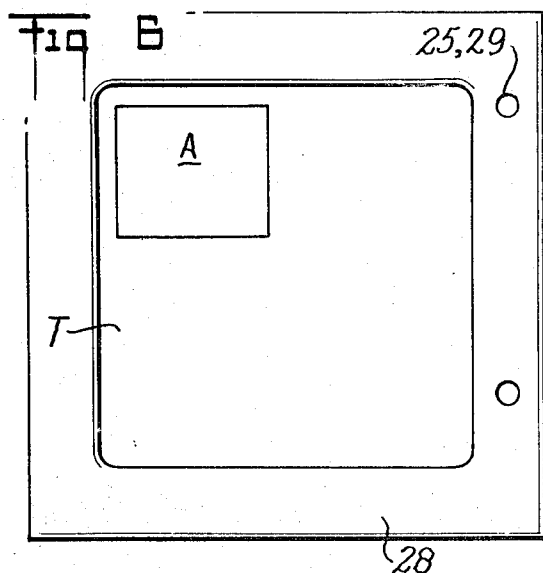


Fig 3







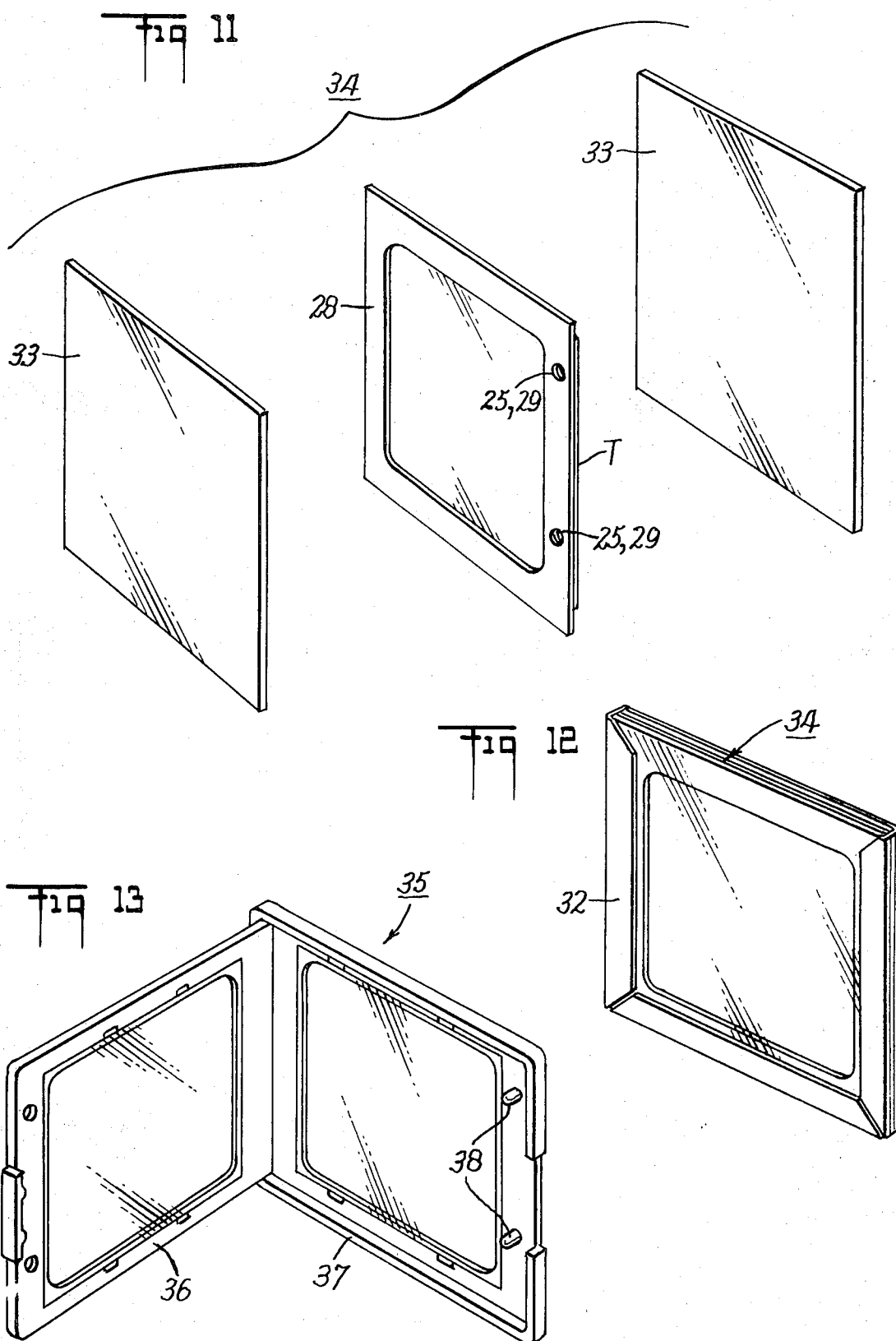
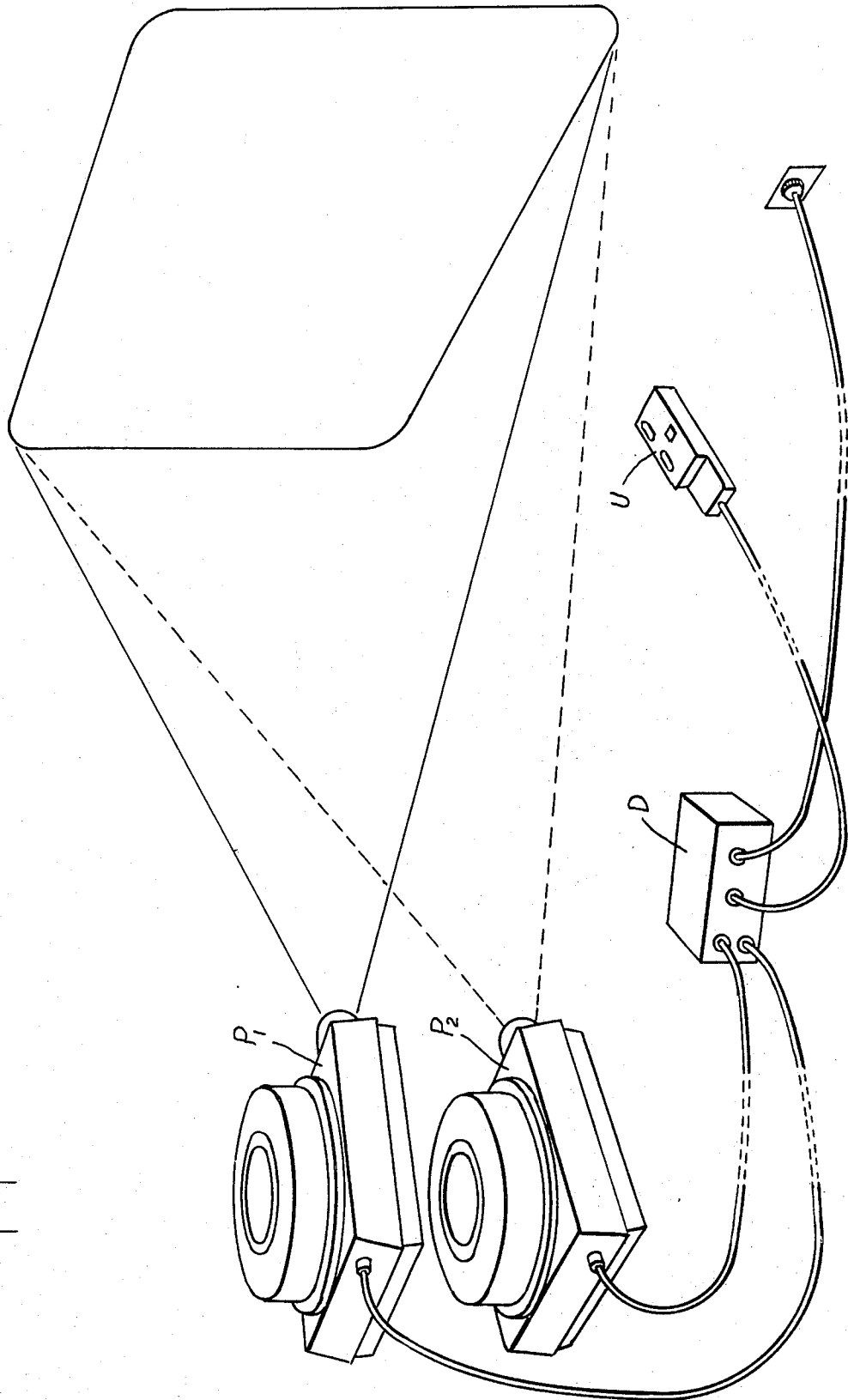


Fig 14



SLIDE PRODUCTION PROCESS AND APPARATUS

This invention relates to photographic equipment and processes and in particular to apparatus and processes employed in still photography and slide projection.

Slide projections are commonly in use today as visual aids for instructional and commercial purposes as well as for those which are purely personal and recreational. Training slides will, for example, frequently contain images of graphs, diagrams or charts which in consecutive order progressively add in incremental fashion remaining portions until the last slide projects the entire picture of what had been previously displayed in part. As between any two consecutive slides, images are shared. When the two slides are projected simultaneously by two projectors enabling the first to gradually fade out while the second is fading in to preserve visual continuity, it is requisite that the shared and overlapping images be in absolutely perfect registry. This presents a problem in the mounting of the film and the preparation of such mounting so that the finished slides will project as thus required.

Previous attempts to attain registry of images on separate and successively projectable slides have included the use of 35 mm. film having lateral sprocket holes which are used to assure proper positioning in the slide mount masked to present a relatively small film projection area.

According to the present invention, processes and apparatus are utilized which result in the desired image registry on successively projectable slides, and the projection areas thereof are relatively large. In general, this is achieved by presenting the displays in art form as a format on paper which is specially lined to provide background limitation and image registration markings, photographing the complete artwork as a negative from which are obtained the positive transparencies and which are then placed into a specially designed registration device. In this device, the transparency is prepared for mounting in a mask being positioned therein with great particularity using methods and means conceived according to the invention. The positive transparencies and masks as thus mounted are inserted into a carrier between glass protectors in a frame and are then ready for projection. Optionally, a specially designed slide carrier having film positioning means similar to those on the mask is provided in which case the mask may be dispensed with in the process. Any one of the transparencies may be used in the registration device as a guide for preparing the other transparencies in the series so as to assure the required image registry.

One object of the invention is to provide a method of producing photographic slides which will separately project with shared images in registry.

Other objects and advantages of the invention may be appreciated on reading the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 shows a typical format upon which a complete art work has been drawn;

FIG. 2 is the black and white negative made from the completed format of FIG. 1 showing the elements being uncovered for the consecutive making of the transparencies in the series;

FIG. 3 shows the registration device where the consecutive transparencies are punched and scored for trimming to slide size;

FIG. 4 is a section on line 4-4 of FIG. 3;

FIG. 5 shows the assembly device for taping the transparency to its mask;

FIG. 6 through FIG. 10 shows a series of (five) transparencies assembled in their masks with the several elements in registration from slide to slide;

FIG. 11 shows the transparency and its mask between cover glasses to form the "sandwich" prior to insertion in a slide frame;

FIG. 12 shows the completed slide in its metal frame;

FIG. 13 shows a modified plastic frame with built-in masking cover glasses and pins for aligning the colored transparencies, and

FIG. 14 is a diagrammatic view in perspective showing an arrangement of slide projectors employing the slides produced to the process of this invention.

The process according to the invention serves to produce, for example, a series of five additive slides. The first transparency, FIG. 6, contains element A originally displayed in art form as hereinafter described. The second transparency, FIG. 7, contains element A positioned thereon at the same place as on the first transparency and adds element B. Similarly the third transparency shown in FIG. 8 contains elements A, B and C with elements A and B having the same positions as on the second transparency. The fourth transparency, FIG. 9, repeats elements A, B, C and adds elements D, and the fifth transparency, FIG. 10, repeats elements A, B, C, D and adds element E. It is the desideratum of the present invention that when any two slides are separately projected on the same area of a screen the elements which are common to both slides will be in precise registration.

According to the process for making the series of five slides as above described, a format is first produced showing the complete art display, as shown in FIG. 1, and a negative 6, shown in FIG. 2 is produced photographically therefrom. The images on the negative which do not appear on all the slides of the series are then covered with opaque light shields 7. The first transparency in the series is thereafter made by photographing the negative 6 with the single uncovered image. The second transparency in the series is then produced by selectively removing the shield 7 from a second image and photographing the negative with the two revealed images. Thereafter the images on the negative are uncovered consecutively and photographed until the entire series is produced. Color may be introduced, if desired, by backing the images on the negative which are to appear on the transparency with acetate sheets of the chosen color. The format, as shown in FIG. 1, contains registration marks 8 used in the positioning of the transparencies in a registration device to be described. The format also contains lines 10 and lines 12 for limiting the area within which the artwork must be contained, respectively, for a 4-inch square slide and a 3 by 4 inch slide, a so-called "show" slide.

The registration device serves in general to properly position the transparencies for making slide registration markings and trimming to accommodate the slide carriers. In the preferred form of the invention such markings are in the form of holes or apertures along the margin of the film. To this end, the device is provided with a base 14, as shown in FIG. 3, which holds in a cutout formed therein a reticle glass 18 on which registration marks 20 are inscribed. The registration marks 8 reproduced from the format on the transparency which was first produced are exactly superposed on the registration marks 20 of the reticle glass being aided in such superposition by a light under the base 14. The registration device 16 also includes a hinged frame plate 22 from which is supported spring-backed punch pins 24. The plate is brought down over the transparency and holes 25 are punched therein by bringing to bear on the plate punch arm 26. The plate 22 frames the film showing that area which will be projected and provides holding guides for the film so that the latter can be scored at S for trimming to size in the mounting components. See FIG. 4.

The first transparency as thus prepared for mounting is then left on the registration device and the four other transparencies are successively prepared for mounting by matching the vertical lines of the registration markings displayed on the films, punching to make the slide registration markings and manually scoring for subsequent trimming along the line S of each film.

After trimming, the film is then placed on a mask assembly device 27, as shown in FIG. 5, having a hinged base 27a on support 27b. A mask 28 which has been die manufactured for fitting in conventional film carriers used in projection is placed on the base 27b. In one embodiment of the invention the mask will have a 35 mm. square opening. The masks con-

tain registration holes 29 to match holes 25 in the film and in positioning the trimmed film T on the mask which are fastened together as for example by tape 30 a set of pins 31 are employed to mate the two sets of holes to position precisely the film T in its mask.

The mounted film is then inserted in a film carrier 32, FIG. 12, between protecting glass plates 33 to form the sandwich 34 and the resulting slide is ready for projection. The process is repeated for each slide in the additive series, and assures that where any two slides of the series are separately projected on the same area of a screen, shared image portions will be in accurate registration.

Instead of using a mask in the process, the trimmed film may be placed directly into a carrier frame 35 shown in FIG. 13. The carrier has two hinged plastic frame plates 36 and 37 having glass windows and the frame 37 has critically located pins 38 to receive the registration holes in the transparencies as they are disposed therein to make the finished film.

In operation, as seen in FIG. 14, two projectors P_1 and P_2 are used which are aligned to project their images on the same portion of the screen. If both projectors were turned on at the same time, and they each had identical slides in them, they would appear as only one image on the screen. The two projectors are linked together, and controlled by a dissolve unit D. All cues are fed through the dissolve unit D. With P_1 projector's lamp on, it is projecting a slide. At the same time, the P_2 projector has the next slide in position ready to be projected. On cue, as by a remote control unit U the dissolve unit fades out the lamp in P_1 and fades in the lamp in P_2 . After lamp P_1 is out, P_1 advances the next slide and stands ready for projection. In loading projectors for this method of projection, all even numbers are in the P_2 projector and all odd numbers are in the P_1 projector. The fading out and in of the lamps simultaneously produces a consistently uniform amount of light on the screen while changing from one projector to the other. Thus, if both projectors had identical slides in them, the

change would be virtually unnoticeable.

What is claimed is:

1. In a process for producing a photographic slide for projection including the steps of manually producing an artwork on a format having art area delimiting markings and a set of registration marks, producing a reproduction of said format, photographing said reproduction to make a transparency therefrom, placing said transparency on a registration device having a base displaying a corresponding set of registration marks, positioning the film on said base according to said registration marks on the film and said device, producing by said device registry designations on said film, trimming the film to the desired size, disposing said trimmed film on a frame support having corresponding registry designations and positioning the film thereon according to said registry designations.

2. A process for producing a photographic slide for projection including the steps of manually producing an artwork on a format having art area delimiting markings and a set of registration marks, producing a negative reproduction of said format, photographing said reproduction to make a positive transparency therefrom, placing said transparency on a registration device having a base displaying a corresponding set of registration marks, positioning the film on said base according to said registration marks on the film and said device, producing registry designations on said film using said device, scoring said film on the device and thereafter trimming the film, mounting said film on a mask according to the registry designations thereon, and inverting the mounted film in a film carrier for projection purposes.

3. A slide-mounting registration device comprising a base, a reticle glass retained by said base, and adapted to receive a photographic film, registration marks inscribed in said glass for positioning said film, a frame plate adapted to be moved relative to said base and means associated with said device for producing registry designations on said film.

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