March 4, 1941. H. KROTOSCHINER 2,233,614

CASING FOR PHOTOGRAPHIC APPLIANCES

Filed Jan. 10, 1938 4 Sheets-Sheet 1

Fig. 1

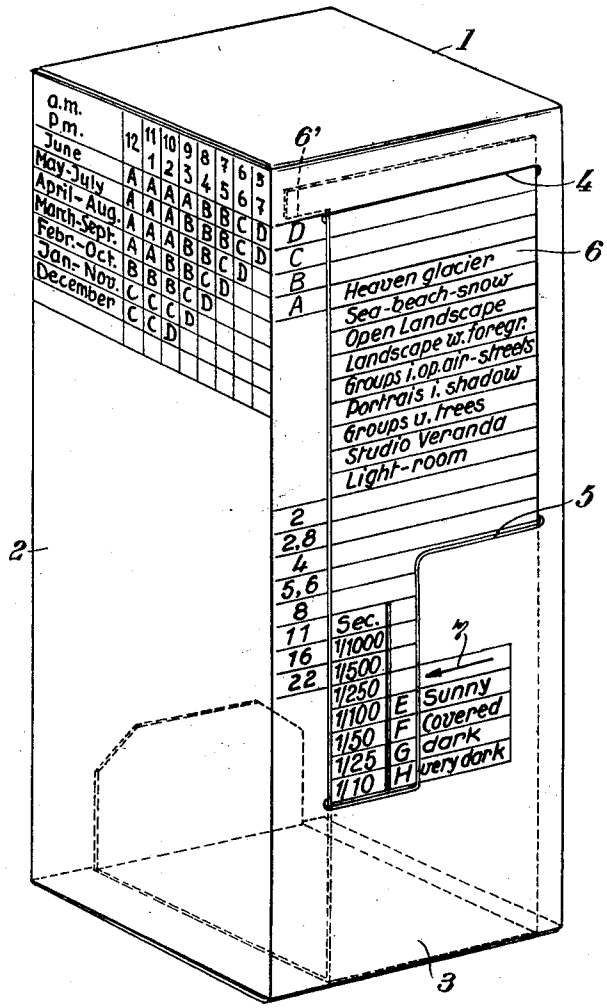
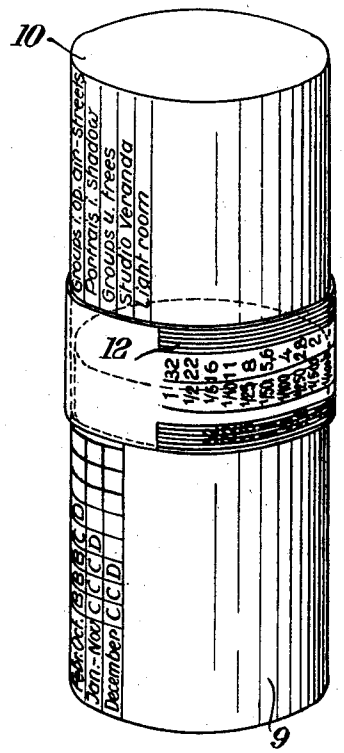


Fig. 4



Inventor:
Heinz Krotoschiner
by
Paul M. Klein
Attorney

March 4, 1941. H. KROTOSCHINER 2,233,614

CASING FOR PHOTOGRAPHIC APPLIANCES

Filed Jan. 10, 1938 4 Sheets-Sheet 2

Fig. 2

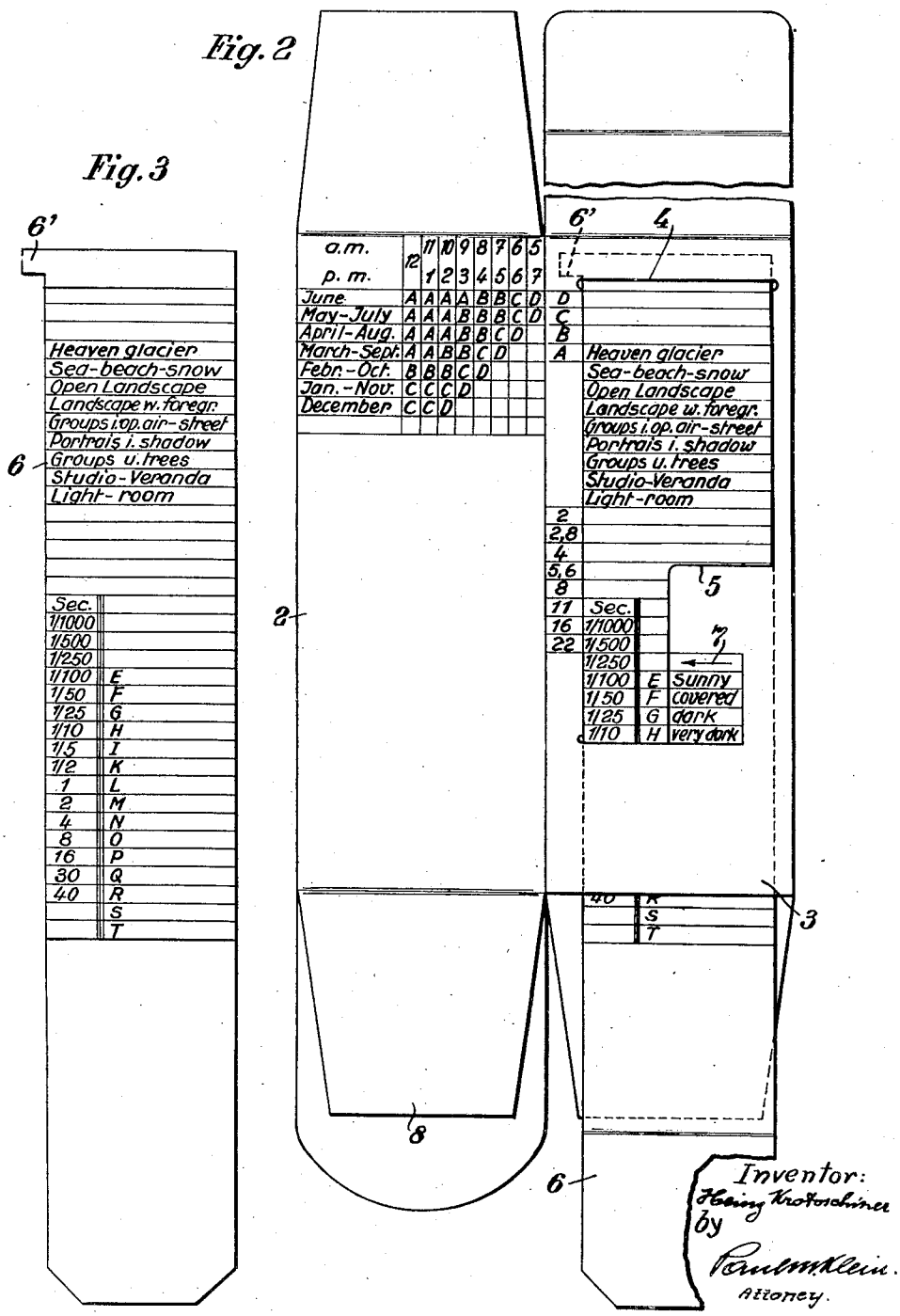


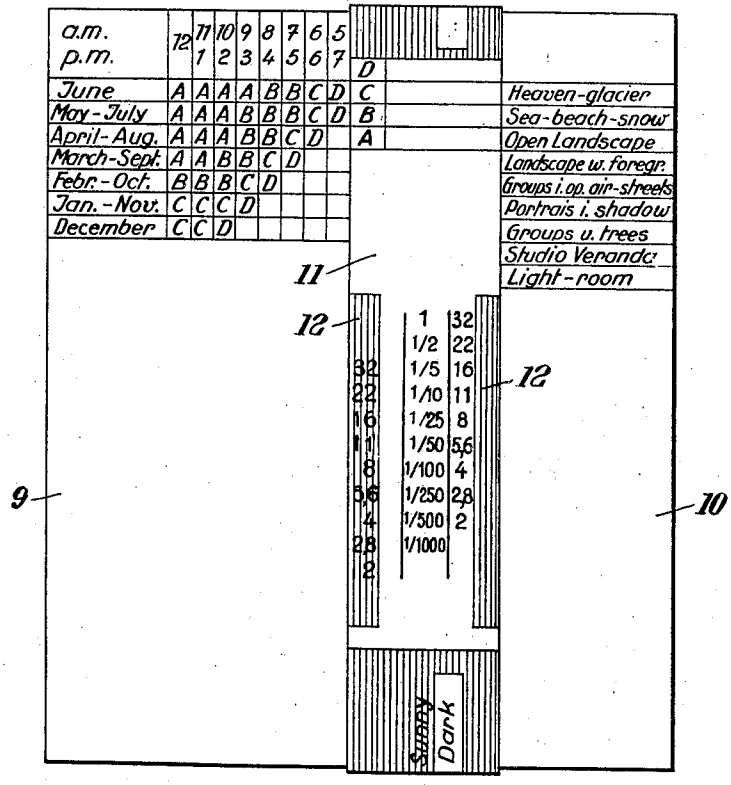
Fig. 3

March 4, 1941. H. KROTOSCHINER 2,233,614

CASING FOR PHOTOGRAPHIC APPLIANCES

Filed Jan. 10, 1938 4 Sheets-Sheet 3

Fig. 5

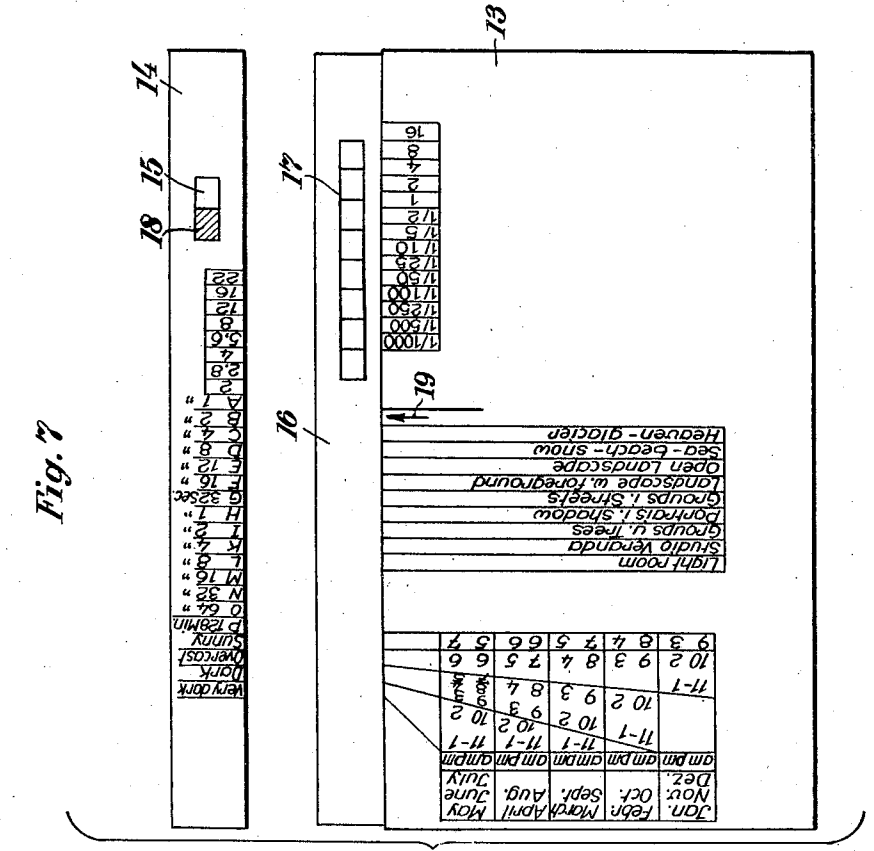


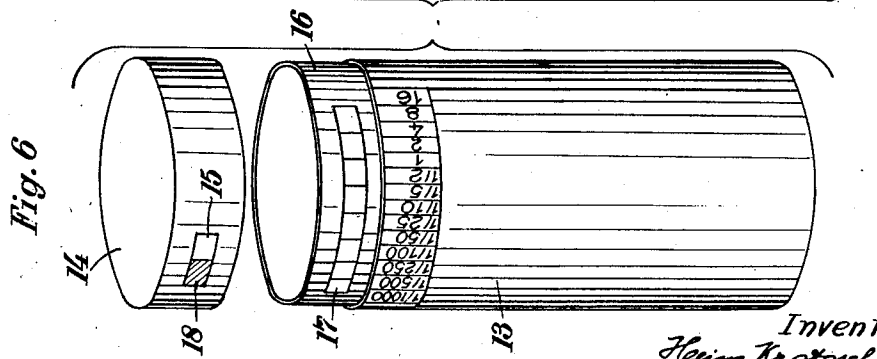
Inventor:
Heinz Krotoschiner
by
Paul M. Klein
Attorney

March 4, 1941. H. KROTOSCHINER 2,233,614

CASING FOR PHOTOGRAPHIC APPLIANCES

Filed Jan. 10, 1938 4 Sheets-Sheet 4





Inventor:
Heinz Krotoschiner
By
Paul M. Klein
Attorney

Patented Mar. 4, 1941 2,233,614

UNITED STATES PATENT OFFICE

2,233,614

CASING FOR PHOTOGRAPHIC APPLIANCES

Heinz Krotoschiner, Berlin, Germany

Application January 10, 1938, Serial No. 184,209
In Germany January 11, 1937

8 Claims. (Cl. 95—10)

The present invention relates to packaging devices or containers for photographic films in general, and especially for film spools and film packs, such as disclosed in my original application Serial No. 125,052, filed February 10, 1937, of which the present application is a continuation in part.

The principal objects of this invention are to provide a packaging container for films, wherein either the container consists of co-related portions which, although normally delivered in fixed position, may be made movable relative to one another, or wherein such container is provided with a movable instrumentality which may be actuated in respect to the container, and wherein either the two co-related container portions, or the container and the movable instrumentality, are provided with cooperating scales indicating various conditions at which photographic exposures are to be made, and wherein such cooperating portions of the container, or said instrumentality, are so moved relative to one another or relative to the container, respectively, as to bring these scales in a proper corresponding position, whereby the time for exposure, and the opening of the iris for a given focal distance, during a certain time of the day, at a certain season or month of the year, at prevailing light intensity is defined for that particular film which is contained within the packaging container.

One of the advantages of the present invention resides in the fact that the data, supplied with the container, and by use of which data the correct exposure requirements may be instantly determined, are applicable especially to the film housed in the container in which it was sold, thereby obviating the employment of complicated instruments for gauging light intensity and calculating the corresponding time of exposure and the opening of the iris, which computations take time and are often faulty, since the sensitiveness of the film is either not known or is not taken into consideration. In the present invention, the data supplied with the container are so calculated as to take into consideration the known sensitiveness of the film contained in the package. This fact entails an added advantage of precluding the very often occurring mistakes in reading of the photometer, and the resulting under- or over-exposure of the film.

Furthermore, inasmuch as the indicated exposure requirements, resulting from the cooperation of the parts of the container, give positive figures for the exposure of the film contained in that package under given conditions, the possibility of making a wrong exposure, either through the faulty use of a photometer or through the non-use of such photometer, is entirely eliminated. By equipping the film container with an automatic timing calculator as the present invention proposes, the manufacturer producing such containers and films provides the future user with positive means for accurately timing his exposures at no greater cost, or at but slightly increased cost over heretofore used packages, inasmuch as present-day film packages usually carry printed matter, and the additional printing of scales and information on the container does not entail an appreciably greater cost over the old type of containers. Such containers may be produced in any already used size and form, prismatic or cylindrical, by using commonly employed material, such as cardboard.

The foregoing and still further objects and advantages of the present invention will become more fully understandable from the following description, in connection with the accompanying drawings, forming presently preferred forms of my invention, but which drawings are by no means intended to limit the same to the actual showing, and in which

Fig. 1 represents one embodiment of my container in prismatic form;

Fig. 2 represents a container of the type shown in Fig. 1 in its collapsed or flattened-out state, ready for use;

Fig. 3 is a detail view of the slide employed in connection with the container in Figs. 1 and 2;

Fig. 4 represents a perspective view of another embodiment of my container in a cylindrical form, wherein is employed a ring revolvable and longitudinally movable relative to the body of the container;

Fig. 5 illustrates a plan view of a developed form of the container shown in Fig. 4;

Fig. 6 is a perspective view of another embodiment of my invention representing a cylindrical container, wherein an actinometer is incorporated; and

Fig. 7 represents the developed plan view of the container shown in Fig. 6.

Referring now specifically to Figs. 1, 2 and 3, the container represents a prismatic formation provided with foldable ends 1, and wherein one of the exterior walls 2 is provided with an exposure table containing, vertically arranged, the month of the year, and horizontally ar-

ranged, the hours of the day. The squares resulting from the intersections between the horizontal and vertical fields are provided with signs or letters, such as A, B, C, D, indicating the light intensities prevailing at certain months and during certain hours. The corresponding or fairly corresponding intensities are uniformly marked. In this way the light intensity for the given hour of the day, on each day of the year, is defined by four degrees or grades. The number of such grades or degrees may be increased. However, for practical purposes, four degrees of brightness usually suffice.

Upon wall 3, adjacent to wall 2, there are marked the four degrees of brightness or light intensities arranged vertically above one another, denoting horizontal fields or strips, and are arranged in the order from top down as follows: D, C, B and A. The use of these indices will be explained presently. On the same wall 3, near the upper edge of the container, is provided a slot 4, and somewhat lower, and starting approximately at the middle portion of the container, is provided another slot 5 in a form substantially resembling the letter S, which slot consists of an upper horizontal and a lower horizontal portion and a vertical connecting portion.

Inserted into slots 4 and 5 is a movable strip 6, the width of which substantially corresponds to the length of slot 4, but which strip is provided with an enlargement 6' at its upper end for preventing the strip from disengaging the container or sliding out from slots 4 and 5. This strip 6 is shown in detail and plan view in Fig. 3, and is provided with a number of notations indicating comparative light characteristics of a number of objects which may be photographed. These objects are arranged in a pre-determined sequence denoting, first, the brightest objects, such as heaven, a glacier, sea, beach, snow, open landscape, etc., whereafter follow medium-light objects. Thereafter are denoted dark objects. Such tables of objects are well known and need not be further explained. Somewhat below the tables of objects near the left edge of the strip is provided a table of exposure periods in seconds, starting with the quickest exposure of one-thousandth of a second and ending with an exposure of forty seconds. Adjacent to the exposure time table are provided co-relating identification letters E, F, G, H, etc., the use of which letters will be explained later on.

Upon wall 3 and below the letters D, C, B, A, will be found numerical notations starting with numeral "2" and ending with numeral "22," which numerals denote setting values for iris opening, based upon the relation between the focal distance of a photographic lens to certain opening areas of the iris, and wherein each number below the immediately preceding number denotes approximately half the area value of such immediately preceding number. For example, the value 2.8 denotes the second largest opening area of the iris, based upon the relation between the focal distance and the opening of the iris, which opening is about half the area than the opening taken in calculation in value 2 thereabove.

Next to the vertical portion of the S-formed slot 5, there are provided five fields. In the uppermost field there is shown an arrow or indicator 7. Below this indicator are notations relating to the existing condition of the skies, such as Sunny; Covered, corresponding to slightly cloudy; dark, corresponding to Considerably cloudy conditions; and Very dark, corresponding to a Completely overcast sky.

Operation

From the table of wall 2, the light intensity for a given month at a given hour of the day may be ascertained by following the horizontal field of the month and the vertical field of the hour. At the cross-section of these two fields will be found a letter. For instance, on the field of June at 10 a. m., the light intensity corresponds to letter A. Now slide or strip 6 is shifted so that the object to be photographed, say, for instance, a glacier, is brought in line with letter A, marked on the left hand upper edge of wall 3. Now the prevailing sky condition is to be considered. Assume that it is sunny at the time the exposure is to be made. Strip 6 having been moved to a position at which opposite letter A the object, in our case the glacier, appears, it will be found that letter E stands opposite to the word "Sunny." Now strip 6 is moved so that letter E will come opposite to arrow 7. This is the final setting which provides the proper readings of the shutter speeds, given in the left hand lower column on strip 6, and of the corresponding values of iris openings, given at the middle portion of the left hand edge of wall 3, for the prevailing photographic conditions.

By consulting the two columns, it will be observed that opposite certain shutter speed numbers will be found corresponding iris opening numbers. Thus the shutter speed of one-thousandth of a second will appear opposite to iris opening "11," shutter speed of one-five hundredth of a second will come opposite to the iris opening "16," and shutter speed of one-two hundred fiftieth of a second will come opposite the iris opening "22." Thereby the speed for any of the three given iris openings is determined for the exposure to be taken.

From Figs. 2 and 3 it will be seen that strip 6 is considerably longer than the closed container. In closing the container, the lower end of strip 6 is preferably folded together with flap 8 of the container and serves as added protection of the contents against exposure to light. Inasmuch as the tables or scales are provided at the adjacent sides of the container, their use in conjunction with slide 6 for determining the proper iris opening and speed of the shutter is readily facilitated by collapsing the container in the manner shown in Fig. 2, after the film spool had been removed. Slide 6 may be produced in the manner shown in Fig. 3 as a separate unit, but may also form a part of the container itself, in which case it may constitute a continuation or a substitution of flaps 8 of the container so that it may be printed simultaneously with the container and torn off when the container is emptied, whereafter the slide is inserted in appropriate slots, corresponding to those shown at 4 and 5, when the tables are to be used for calculating the speed and opening of the iris.

Although the form of the container as shown in Fig. 1 corresponds to the usual container employed in shipping films, some producers of films prefer to employ cylindrical containers, such as illustrated in Figs. 4 and 6. I provide upon the outer surface of such cylindrical containers suitable scales or tables, similar to those described in connection with Figs. 1 and 2. In order to facilitate the description of the various data provided on a cylindrical container, such as shown in Fig. 4, I have shown in Fig. 5 a de-

veloped plan view of the device, wherein numeral 9 denotes the bottom portion of the tubular covering, whereas numeral 10 denotes a corresponding cover, both parts being provided with end walls in the usual manner.

Engaging both bottom and top portions of the container, and preferably overlaying their abutting ends, is provided a ring formation 11, which is revolvable about members 9 and 10, and is slidable longitudinally. I prefer to form this ring from either transparent or partially transparent material. However, the ring may be made of opaque material, such as cardboard, sheet metal, or the like, in which case the ring is provided with perforations or cut-outs to facilitate the reading of data imprinted upon the container and underlying the ring. One of the container parts, for instance, bottom 9, is provided with a months and hour table, corresponding to that shown on wall 2 of the container, illustrated in Figs. 1 and 2. The letters D, C, B, A also appear on ring or band 11.

The ring is marked with numerals and fractions denoting shutter speeds, corresponding to the shutter speed indications provided on slide 6 of Fig. 1. Upon cover 10 is imprinted a table of comparative objects from the lightest object, such as "Heaven or Glacier," to the darkest, such as a "Room." Below and to the left of these tables (see Fig. 5) are arranged two parallel vertical columns of numbers indicating different iris openings. The extreme left column is made partially invisible by the left hand shaded portion 12 of the ring, while the right hand column is plainly readable next to the right hand shaded portion 12 of the ring.

At the lower end of the ring, there is a shaded area with a cut-out, through which latter may be read either the legend "Dark" or "Sunny," depending upon the position of the ring relative to cover 10. The word "Sunny" at Fig. 5 is intended not to be readable at the setting of the ring illustrated. The dark or shaded portions 12 are intended to cover either the left or the right row of numbers, depending upon the setting of the ring, corresponding to the light conditions at which an exposure is made. If the day is cloudy or dark, the setting of the ring will be the one shown in the drawings. In the event it is a light, sunny day, the ring is shifted to the left, whereby the word "Dark" is made invisible and the word "Sunny" is made visible, and in which case the right hand shaded portion 12 will cover the right hand row of numbers, while the left hand row of numbers will be clearly readable.

In the form shown in Figs. 4 and 5, I employ a ring provided only for either light or dark exposure conditions. It is obvious, however, that a sky-light graduation, similar to that employed in connection with Fig. 1, and ranging from "Sunny" to "Very dark," may be substituted. For simplicity's sake, and for the purpose of explaining the operation of the cylindrical container, I am only showing the two extremes of "Sunny" and "Dark," assuming that other intermediate degrees of brightness may be judged by the user.

Operation

This modified form of my film container is as simple to handle as that explained in connection with Figs. 1 and 2. First the month and the hour of the day is found in the table at the left hand upper corner imprinted on the bottom portion of the container. Assume the month is March and the hour is 4 p. m. and assume further that the object to be photographed is a glacier. Ring 11 is then set so that the horizontal field, denoted by letter C, comes opposite to the field marked "Heaven-glacier." Further assume that the light condition corresponds to a dark day. Thus, it is required to shift the ring longitudinally until "Dark" appears in the lower shaded or opaque portion of the ring.

By this movement the right hand vertical column of numbers next to the right hand shaded portion 12 of the ring becomes visible, and opposite to each number of this column of figures will be found corresponding values denoting the speeds at which the shutter is to be operated. Thus, for instance, opposite the top number "32," corresponding to the smallest iris opening, will be found the designation "1," corresponding to one second of the shutter speed; below number "32" is found the next larger iris opening indicating number "22," and adjacent thereto shutter speed of "½," denoting one half second, etc. This is the final setting which provides the desired information for making a correct exposure.

In the event the day at which the exposure is to be made happens to be sunny, the ring is shifted longitudinally so that the word "Sunny" appears in the opening of the broad, opaque field at the bottom portion of ring 11, whereby the column of iris opening numbers next to the right hand shaded portion 12 is covered by the latter, whereas the left hand shaded portion 12 clears the numbers now below that shaded portion. It will be seen that the values corresponding to the openings of the iris at the left hand column are practically twice the values of the values given in the right hand column. In other words, opposite to number 16 of the right hand column will be seen the number 32 at the left hand column, while the exposure period for both numbers is ⅛ of a second. This means that the size of the iris opening used on a sunny day is twice as small as on a dark day, for the same shutter speed.

The present invention is in no way intended to restrict me to the two specific types described above, but is designed to cover broadly the use of a film package or film container wherein the latter is provided with suitable facilities for quickly ascertaining the proper iris openings and the corresponding exposure periods for a given period of the year and hour, and for various objects at existing light intensities, all of which data are taken in consideration in the preparation of these facilities, including even the specific light characteristics and the coloring of the objects to be taken, and wherein the container is constructed of two or more co-related and co-acting parts, permitting a quick and simple determination of the data sought.

In addition to the arrangement and construction of packaging devices for films described above, it sometimes becomes valuable to ascertain, in addition to the information gained by proper operation of the heretofore described devices, the actinic strength of the prevailing light. The present invention readily lends itself to the application of a simple actinometer for ascertaining the actinic brightness of objects or sceneries to be photographed, which application of an actinometer to the above described devices does not in any way deviate from the broad scope and intent of the present invention.

A modified embodiment including such acti-

nometer is illustrated in Figs. 6 and 7, wherein Fig. 6 shows a cylindrical container, whereas Fig. 7, illustrates a developed plan view of both container portions, that is, of the cover and of the body of the container. In these figures, numeral 13 denotes the body of the container, whereas numeral 14 indicates the cover. As will be seen from Fig. 7, the container body is provided with a table denoting light intensities during the different months of the year at certain stated hours. These light intensities are divided into four groups, in a similar manner to that described in connection with the previous figures, with the exception that instead of using indices A, B, C and D, these light intensity groups are graphically separated by converging lines, terminating at the edge of the exterior surface of body 13 at substantially equal distances.

The body is further provided with a table of comparative objects to be photographed, which objects are arranged in order from the darkest objects on top to the lightest objects on the bottom. Below this table is a column of exposure periods. Upon the cylindrical surface of the cover will be seen a marking starting on top with information denoting the conditions of the sky. Right below is a double column of letters and numbers. The letters start with P and end with A. Next to the letters are numbers denoting, in minutes and seconds, different time periods starting with 128 minutes and ending with one second. The use of these double columns of letters and numbers will be explained presently.

Below this double column there will be seen a column of boxed-in numbers denoting various openings of the iris. Below these iris opening numbers will be seen an opening 15, which is intended for permitting light to strike against the outer surface of neck 16 of the container body, to which neck is secured a strip 17 of light-sensitive material, such as "Daylight paper." By turning cover 14 relative to neck 16, opening 15 may be brought over a portion of strip 17, thereby exposing it to light. The degree of coloring to which the exposed portion of strip 17 turns may be readily compared with a standard tone of coloring 18, which is provided adjacent to opening 15. The numbers indicating minutes and seconds of time in the double column mentioned above are employed in determining the time it takes until the exposed portion of strip 17 assumes the desired coloring in comparison with standard tone 18.

By establishing the time it takes to color such exposed portion of strip 17 to the coloring of the standard tone 18, and finding the corresponding time period in the column, cover 14 is now turned until that time period comes opposite arrow or indicator 19. The proper iris openings and exposure periods required for the prevailing light conditions may be now read from the setting of the respective columns.

The same results may be obtained by disregarding the light-sensitive strip 17 entirely, and by using the letters instead of the numbers in the double column of the cover.

In order to ascertain the proper time periods and iris openings for the given photographic conditions, the upper table, denoting light intensities for given hours and months, is first consulted. When the proper existing light intensity is found, the cover is turned until one of the four degrees of the sky conditions comes opposite the line denoting the light intensity. Now the table of comparative objects is consulted, and the corresponding object is found to be opposite one of the letters of the double column on the cover. That letter, appearing next to the object to be photographed, is then brought opposite indicator 19 by turning the cover. At this setting the columns of exposure speeds and iris openings are in correct relation to each other, corresponding to the existing photographic conditions, and according to this setting the exposure is to take place.

From the foregoing it is readily evident that specific details of construction, the arrangement of the tables, columns or scales employed at the different parts of containers, and the application and form of the instrumentalities movable relative to such containers, may be varied in many respects, although intended for the same ultimate result of readily and speedily giving the vital information of exposure speeds or periods and iris openings for the given or existing photographic conditions. As I have indicated in connection with Figs. 6 and 7, my film packages may be also readily supplied with an actinometer as an auxiliary aid to the co-related tables and columns employed in all three modifications described; however, its provision is not absolutely essential.

By the same token, other changes and improvements may be readily incorporated in the present invention, and I therefore reserve for myself the right to make such changes and improvements, all within the broad scope and intent of devising film containers by means of which the proper timing and iris openings may be readily ascertained by the use of cooperating tables and columns provided with the containers, and calculated with due respect to the sensitiveness of the films for which the containers are intended, at given photographic exposure conditions, without departing from the spirit of this invention, as defined in the annexed claims.

I claim:

1. In a packaging device for films, two coacting film accommodating members, one of said members forming the major, essentially stationary portion of a film receptacle, while the other member constitutes the operative, complemental portion thereof, both members bearing correlated intelligence pertaining to exposure requirements for the film intended to be packed in the device, the members being movable relative to one another for bringing the intelligence of one member to the proper setting in respect to the intelligence of the other member, in accordance with and corresponding to prevailing light conditions, the combined setting of the intelligence of both members providing a final reading which indicates the correct exposure requirements for the film at such prevailing light condition.

2. In a film packaging device, at least two cooperating film accommodating members, at least one of said members constituting the major, essentially stationary part of a film receiving receptacle, the other member forming an essentially operable, minor, but complemental, coacting part thereof, both members bearing correlated intelligence denoting various exposure requirements for the film intended to be placed into the device, said members being adapted to move and to be set relative to one another for bringing their respective intelligence into a coordinated position, corresponding to prevailing light conditions, thereby producing a resultant reading giving the correct exposure values for the film at such prevailing light conditions.

3. In a film packaging device, as set forth in claim 2, and coacting actinometer elements pro-

vided with both members and adapted to be adjusted to an operative correlated position by the movement of the members in respect to one another, for ascertaining the light intensity measurements at prevailing light conditions.

4. In a film packaging device, as set forth in claim 2, and coacting actinometer elements provided with both members and adapted to be adjusted to an operative correlated position by the movement of the members in respect to one another, for ascertaining the light intensity measurements at prevailing light conditions, said members, their respective intelligence, and said actinometer elements being so constructed and arranged, that the resultant reading of the intelligence of the set members and the light intensity measurement obtained from the adjusted actinometer elements correspond to one another and serve as reciprocal check means for the respective values indicated.

5. In a film packaging device, as set forth in claim 2, one of the members comprising a substantially square-primatic container, the other member being constructed to slide in respect to the body of the first member.

6. In a film packaging device, as set forth in claim 2, one of the members comprising a substantially square-primatic container, the other member being operatively associated with and movable relative to said container, said container being provided with a slot and cut, said movable member passing through said slot and cut and having means for limiting its movement relative to the container.

7. In a film packaging device, as set forth in claim 2, said members comprising substantially cylindrical portions joined by a ring-shaped band, said members and said band being movable relative to one another.

8. In a film packaging device, as set forth in claim 2, and coacting actinometer elements provided with both members and adapted to be adjusted to an operative correlated position by the movement of the members in respect to one another, for ascertaining the light intensity measurements at prevailing light conditions, one of said members comprising a cylindrical container, the other constituting a cover therefore, one of said actinometer elements being associated with the container, the other, complementary element being provided with the cover.

HEINZ KROTOSCHINER.