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Directions for using the

Leitz

'Leica' Camera



E. Leitz, Inc., New-York
60 East, 10th Street

Special Agencies controlled by New-York Office:

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Washington District: Paul L. Brand, Investment Bldg., Washington, D. C.

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Leitz

'Leica' Camera

(Patented in Germany)

for taking single pictures on a standard
cinematograph film strip.

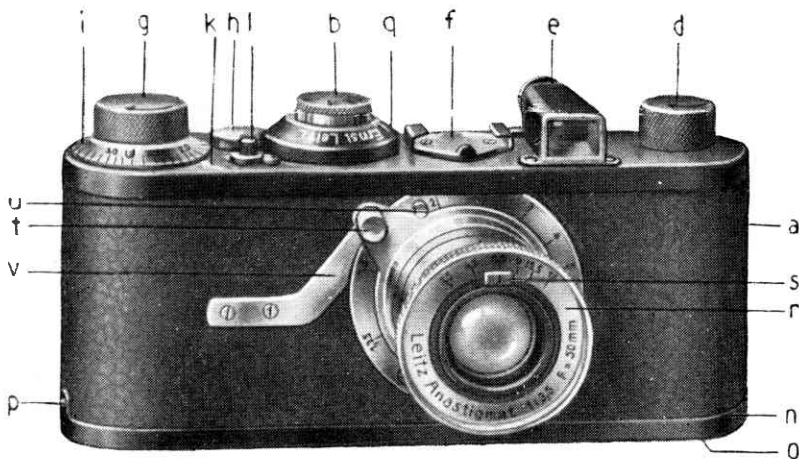


Fig. 1 (1/2 act. size).

The external appearance of the 'Leica' camera is shown in Figs. 1 and 2. Turn down the upper narrow side of the camera and open the camera lid *n* (Fig. 1) by turning the lid swivel *o* (Figs. 1 and 3) from 'closed' to 'open' as far as it will go and lift the lid a little at this end. The lid pin *p* at the other end will then easily unhook.

The interior of the camera will then present the appearance shown in Fig. 4. Now withdraw by the knurled knob the film chamber *e* under the reversing milled head *d* (Fig. 1) and likewise the winding spool *m* under the advancing milled head *g* (Fig. 1).

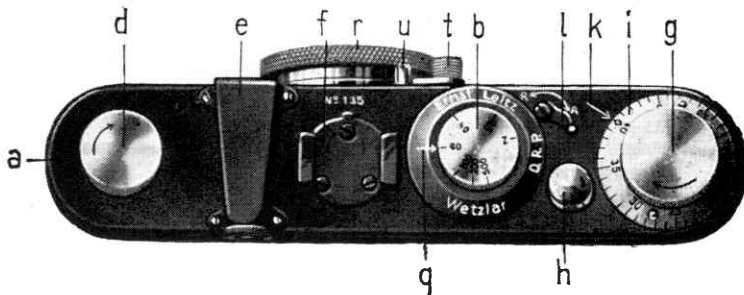


Fig. 2 ($\frac{1}{2}$ act. size).

The film chamber *e* (Fig. 6) has a cylindrical shape and is made in three parts, viz. the outer shell *e*¹, the inner shell *e*² and the film spool *e*³. With the index finger of the left hand disengage the outer shell spring *e*⁵. It will then be an easy matter to withdraw the inner shell *e*² and from the latter the film spool *e*³.



Fig. 3.

The film chamber should be loaded in the dark room, unless use is made of the daylight spool mentioned below. The camera is designed for perforated standard cinematograph

films. Each film chamber accommodates a film strip about 5 ft. long, which suffices for 36 pictures measuring 36×24 mm. ($1\frac{1}{2} \times 1$ inch). It will, however, take strips of any shorter

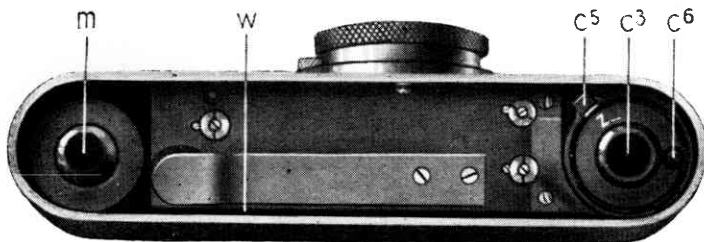


Fig. 4 $\frac{1}{2}$ (act. size).

length. The film end intended to go into the chamber spool should be cut in the manner indicated in Fig. 6, i. e. to a short taper with a front end $\frac{3}{8}$ inch. wide. Then, with the coated side inward, pass it through the spring e^4 of the chamber spool (in the direction of the arrow) and, letting it project $\frac{1}{4}$ inch at most, **double it over** (Fig. 6). The other end should be cut to a taper at least 4 inches long, beginning at the middle of the end of the strip, but so that the taper may not cut into any of the perforations*) (Fig. 5). Now wind the strip, introduce the loaded chamber spool, with the knurled knob leading, into the inner shell e^2 (Fig. 7) and then put in both together, with the knurled knob on top, into the outer shell e^1 , so that the two slits in the two shells may correspond (Fig. 8). The outer shell spring e^5 will then retain the inner shell by the notch not marked. The slit of the film chamber will now still be open. If now the knurled knob of the chamber spool be turned a little way to the left the free end of the film will move forward by its own elasticity. Seize it and draw it out to the extent of about $1\frac{1}{2}$ inches (Fig. 8). Now hold the film chamber as shown in Fig. 9, release the outer shell spring e^5 with the index finger of the left hand and close the film chamber with the right hand by giving the inner shell **half a turn backwards to the left**, until the spring e^5 engages in the inner shell notch marked Z. In this state the charged film chamber should be kept, until required, in the card case supplied with it.

Daylight Film Spool. The films are now also supplied in the form of daylight film spools, ready cut to taper and spooled, which renders the operator independent of the dark room,

*) We supply ready cut films, if required.

These spools should be introduced into the film chamber (in subdued daylight) in the manner described above (The empty chamber spool c^3 is naturally dispensed with in this case). While the two slits of the two shells are still in correspondence, the film chamber being accordingly open, detach the black paper strip and, together with the film end, pull it out about $1\frac{1}{2}$ inches. Then close the film chamber, as directed above and shown in Fig. 9, and completely pull out the black paper strip, restraining, as far as possible, the film. The black paper should be held close up to the film chamber when it is being pulled out, as otherwise it may tear off short and difficulty may be experienced in recovering the torn edge still in the film chamber.

The film chamber may be introduced into the camera in subdued daylight. To begin with, pull out from the chamber about 4 inches of the tapered commencing end of the film and, with the coated side out, clamp it in the direction of the arrow in the spring m^1 of the winding spool m (Fig. 10), but do not wind it on. Note that the straight edge of the film should be in contact with the spool flange attached to the knurled knob. Otherwise the sprockets will not register properly with the perforations in the strip and may damage the film, which in its turn may cause other obstructions. The taper of four inches should begin at the film chamber slit. The winding spool and the film chamber together with the film are to be introduced jointly into the camera, the film passing through the camera slit w (Fig. 11). In the event of the film chamber, while being inserted, meeting with an obstruction before reaching its position, give a slight turn to the reversing milled head d (Fig. 1), so that the chamber may slip into position. The chamber fits the camera in one particular position only (see Figs. 4 and 5), and is not interchangeable with the winding spool, which, moreover, can be distinguished by its different form and notably by its smaller knurled knob, so that the two spools are not liable to be confused.

When closing the camera (Fig. 12) note that the swivel o on the camera lid n should be set right over to 'open'. The perforated projection on the camera lid should be hooked over the lid pin p , after which the lid should be shut down and the swivel o locked from 'open' to 'closed', turning as far as it will go. This will cause the locking extension of the swivel to grip the inner shell pin o^b and open the film chamber. The film will then be quite free to advance. Now move the small lever l (Fig. 2) from R to A. This engages the mechanism of the shutter. Wind the advancing milled head g twice and release the shutter button h twice. This is required in order to move forward the first useless portion of the film. The film strip advances correctly while winding when the reversing milled head d (Fig. 2) turns

direction opposite to that of the arrow. It is advisable to turn the reversing milled head *d* back a little in the direction of the arrow until the film becomes sensibly faint.

The counting disc *i* situated under the advancing milled head *g* can be rotated independently of the latter with the aid of the two projecting lugs. Turning it to the left, set it so that the counting arrow *k* may read 0 (Fig. 2). Every time that the advancing milled head *g* is wound the counting disc advances automatically through one interval.

The focal plane shutter winds under cover by turning the advancing milled head *g* (Fig. 2) in the direction of the arrow as far as it will go. At the same time the film advances by the width of a picture.

The slit should be set, while wound, with the aid of the speed button *b* (Fig. 2). The latter has exposure numbers giving fractions of a second (e. g. 20 = $\frac{1}{20}$ second, Z for time exposure). Pull the speed button up and then turn it until the required exposure number is opposite to the speed arrow *g*, and allow the button to spring back. It is advisable to accustom one's self to exposures of $\frac{1}{20}$ to $\frac{1}{60}$ second and to regulate the intensity by means of the lens diaphragm. Short exposures, such as $\frac{1}{200}$ and $\frac{1}{500}$ second, are solely required for sporting pictures in a good light, when naturally the diaphragm should be opened to its full extent. Time exposures should be made with a short wire release, which may be attached by a fixing clamp to the camera above the shutter button *h*. When the speed button *b* is set at Z, the focal plane shutter will remain open as long as the shutter button *h* or the wire release is being pressed down. A standard screw socket is provided for using the camera on a stand.

The objective is a Leitz 'Elmar' Anastigmat of a focal length of 2 inches and a relative aperture of F/3.5. It is mounted in a tubular socket, which can be easily withdrawn and locked by turning to the right.

The diaphragm is operated with the aid of the diaphragm lever *s* (Fig. 1). The scale gives the relative apertures of the objective. The ratios between the times of exposure and the full apertures are as follows:

Relative aperture:	35	4.5	6.3	9	12.5	18
Relative time of exposure:	1.6	2	4	8	16	32

The distance scale is set by turning the lens mount with the aid of the focussing lever *t* (Fig. 1), the reading being taken with the index. The range of the rotation is restricted by the distance stop *u*. The focussing lever *t* is retained in the infinity position (∞) by the infinity spring *v*, which prevents its acci-

dental motion from its proper position. The infinity spring should be depressed in the event of pictures being taken at close ranges, which may be as short as 3 feet. The depression of the spring releases the focussing lever, and the lens may then be set to the distance scale.

The view finder *e* (Fig. 2) should be brought up close to the eye. The view within the oblong frame should be in the middle of the circle of light so as to ensure accurate agreement with the film picture.

The 'Fodis' short-range finder slides into the clamp *f* (Fig. 2) at the side of the view finder. It serves for quickly and accurately determining short distances. It is only needed when pictures are to be taken at distances within ten yards. The manner of using it is described in a separate pamphlet.

The release of the shutter button *h* (Fig. 2) should be made slowly, the finger being steadied as shown in the frontispiece. The button should not be released spasmodically, as this may cause the camera to oscillate. Time exposures should be made with our wire release with fixing clamp.

To wind back the film. When the entire strip has been exposed (which is indicated by the advancing milled head *g* (Fig. 2) refusing to move freely when an attempt is made to turn it) or when a partly exposed strip is to be taken out*, the film should be wound back from the winding spool *m* into the film chamber *e* (Figs. 4 and 5). To this end the lever *l* should be set to R (Fig. 2), whereby the shutter mechanism becomes disengaged, so that the film is free to travel back. Now hold down the press button *h* and, while doing so, turn the reversing milled head *d* (Fig. 2) in the direction of the arrow engraved on its surface until further winding meets with a little resistance. Continue to wind against this resistance. During this stage of the motion the end of the film detaches itself from the winding spool spring *m*¹. Give the milled head *d* about five more turns in order that the whole of the film may enter the film chamber.

The film chamber may now be removed in daylight. Turn the lid swivel *o* (Fig. 3) to the left to 'open' (as far as it will go), open the camera lid *n* and see that the outer shell spring *o*⁵ of the film chamber (Fig. 4) engages accurately with the inner shell notch *Z*, after which the film chamber may be withdrawn.

*) In the latter case a piece of the film should be cut off, the length of which after ten exposures would be 17 cm. of waste film at the start plus 10 x 3.7 cm., i. e. 54 cm. in all.

Directions recapitulated in memorandum form.

(To be carefully followed.)

When daylight spools are used the directions apply from Fig. 7 onwards.

Arrangement for introducing the film into the camera.

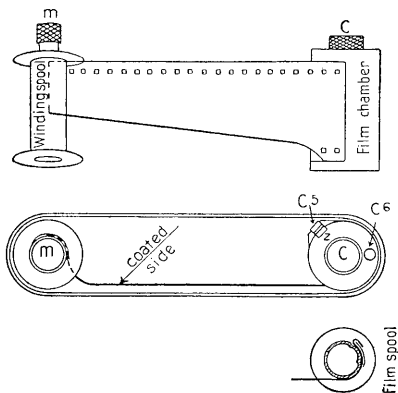


Fig. 5.

1. Wind film on chamber spool (in dark room).

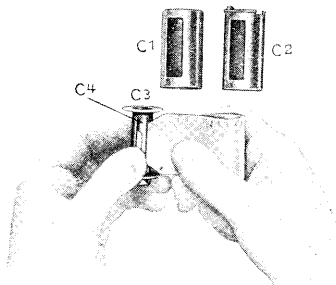


Fig. 6.

Pass taper end of film in the direction of the arrow through spring c^4 (coated layer within); double over and wind on (coated side within).

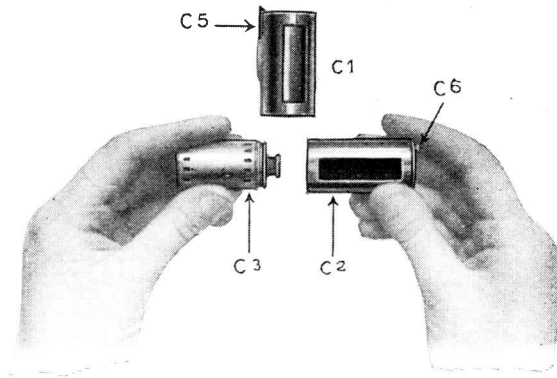


Fig. 7.

Slip film spool (or daylight spool) into the inner shell σ^2 , knurled knob foremost.

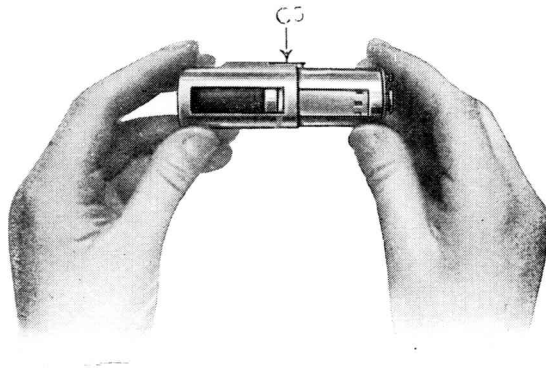


Fig. 8.

Slip both into the outer shell σ^1 . Place the two slits in agreement. Pull out about 4 cm. ($1\frac{1}{2}$ in.) of end of film (in daylight spool together with the black paper strip).

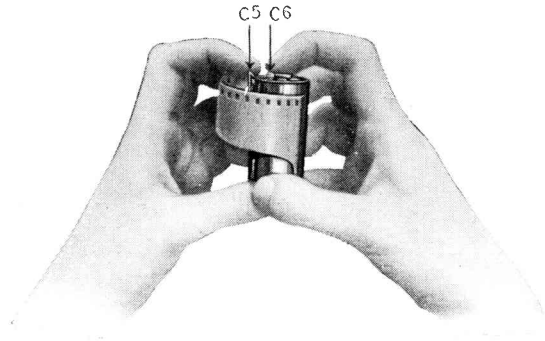


Fig. 9.

Close film chamber by releasing the outer shell spring c^5 and giving the inner shell c^2 half a turn backwards to the left till the spring engages in the notch Z. (Then in the case of daylight spools, pull out completely the black paper strip, restraining the film while doing so).

2. Load the camera (in subdued daylight).

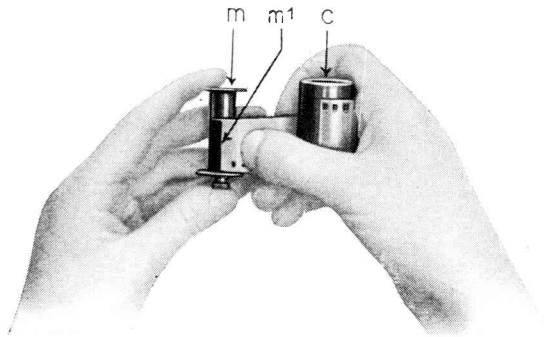


Fig. 10.

Take out the winding spool m , pull out about 10 cm. (4 in.) of the film from the film chamber and clamp firmly under the winding spool spring m^1 in the direction of the arrow (coated side out and straight edge of film strip in contact with the flange of the winding spool nearest its knob).

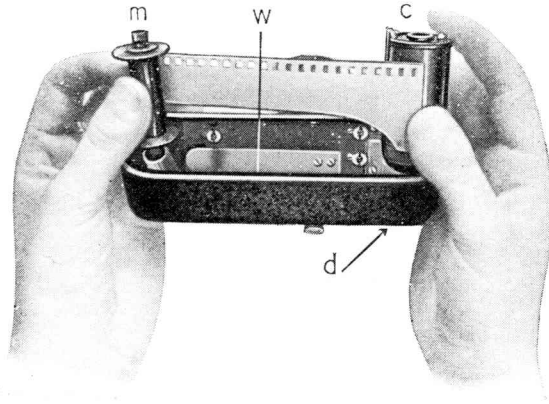


Fig. 11.

Place opened camera in front of you, with the lens looking away from you, the film chamber on the right, the winding spool on the left. Introduce the film through the camera slit *w* with the taper edge down. (In the event of the chamber being arrested before arriving in position give a slight turn to the reversing milled head *d*.) The outer shell spring σ^5 (Fig. 4) must engage at Z.

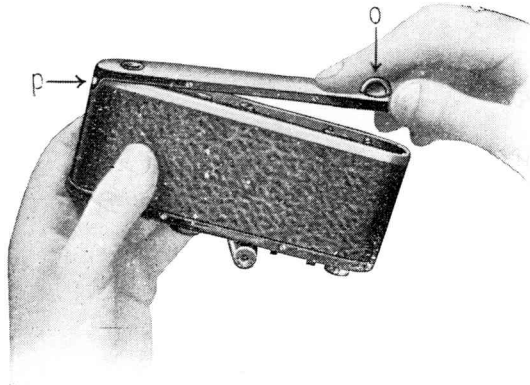


Fig. 12.

Turn the lid swivel *o* right over to 'open'. Hook the camera lid over pin *p*. Close lid and turn lid swivel *o* right over to 'closed'.

Move the lever *l* (Fig. 2) from *R* to *A*. Turn the advancing milled head *g* twice and press down (for advancing the useless portion of the film). Turn the reversing milled head *d* once or twice in the direction of the arrow, until the film becomes fault. Turn the counting disc *i* to the left, by means of its two lugs, till 0 is opposite the counting arrow *k*.

3. Taking the picture. Draw out the lens, lock it by turning to the right, set the diaphragm (in the case of close range pictures likewise the distance scale and the short range finder). Turn the advancing milled head *g* in the direction of the arrow as far as it will go, verify or set the speed button *b*. Sight through the view finder *e*. Slowly release the shutter button *h* (Frontispiece).

4. Take out film (in daylight). See Figs. 1 to 5. Move lever *l* from *A* to *R*. Keep shutter button *h* pressed down. Turn the reversing milled head *d* until resistance is felt, turn on (causing the film end to become detached from the winding spool spring), and give five further turns. Turn the lid swivel *o* (Fig. 3) to the left to 'open'. Open the camera lid *n* (in the event of the outer shell spring *o*⁵ not being in engagement at *Z* turn the inner shell slightly to the right or left until the spring engages). Withdraw the film chamber *e* by its knurled knob.

Leitz 'Leica' Camera with Compur Shutter.

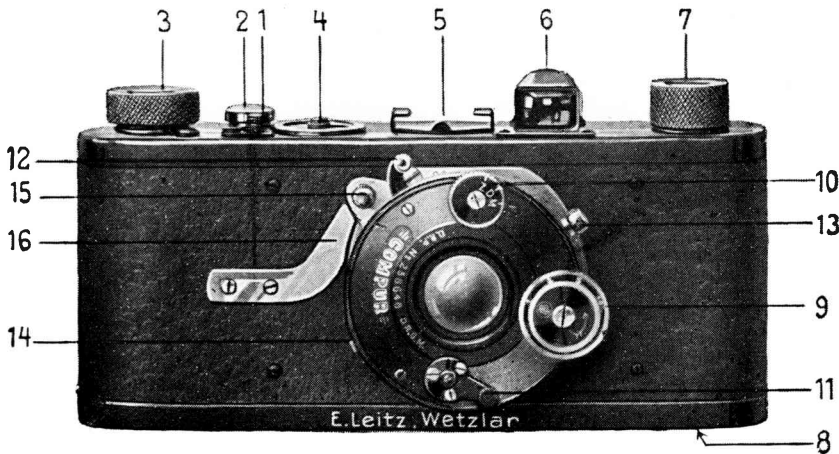


Fig. 13 (about 1/2 act. size).

In use this camera differs in but few respects from the camera with focal plane shutter. In place of the latter the lens is fitted with a Compur shutter, which is the most reliable of all central shutters.

The **compur shutter** may be set for the different speeds with the aid of the disc 9, the obtainable speeds being: 1, $\frac{1}{2}$, $\frac{1}{5}$, $\frac{1}{10}$, $\frac{1}{25}$, $\frac{1}{50}$, $\frac{1}{100}$ and $\frac{1}{300}$ second. To this end the small disc 10 should be turned with the mark M (for Instantaneous) to the index line. The shutter is wound by turning the lever 11 as far as it will go, and it may be released either by depressing the lever 12 or the wire release attached to the socket 13. When the disc 10 is set to Z (Time) the shutter opens when the lever 12 or the wire release is momentarily depressed for the first time, and it shuts when the second pressure is applied in like manner. When the disc 10 is set to the mark D (Pressure) the shutter remains open while the lever 12 or the wire release is being held down.

The **lens socket** should be pulled forward before taking a picture and may be locked in three different positions by turning it to the right. Set it to that position in which the disc 10 of the Compur shutter is situated at the top. In this way the shutter may be easily released by applying the index finger of the right hand to the lever 12.

The **pressure button** 2 requires to be sharply depressed after each exposure to release the catch, after which the film can be advanced.

The **index of the counter** 4 should now be set to 0, after which 36 pictures may be taken in succession. Each exposure is automatically registered by the counter.

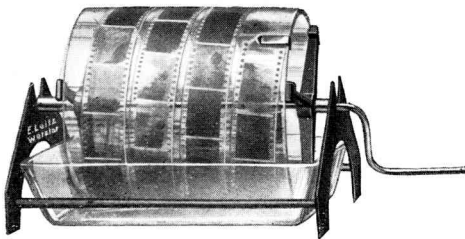


Fig. 14 (about $\frac{1}{6}$ act. size).

Leitz Developing Drum. This arrangement is very convenient for developing the film strips. The metal frame with the glass cylinder, upon which the film strip (with the coated

side out) is fixed by means of two clamps, can be quickly set up above dishes placed in readiness and containing the requisite solutions, etc. When using metol-hydroquinone normally exposed films require to be developed for about 7 minutes.

Simple Enlarging Apparatus for 'Leica' Films.

This simple apparatus is available for use with daylight as well as artificial light. In the latter case the apparatus is

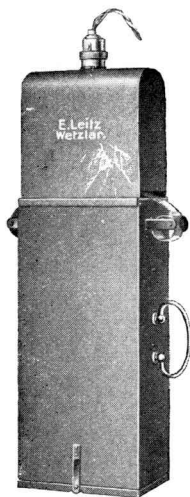


Fig. 15 ($1/10$ act. size).

used in conjunction with the metal casing shown in Fig. 15 containing a 100-watt filament lamp. The latter has a bulb of opal glass and furnishes a uniformly diffuse light, so that

a condenser may be dispensed with. The lamp is connected directly to the supply circuit by means of a plug contact. The film, without being cut up into single pictures, is clamped under the glass plate of the film window, with its coated side inwards. After releasing the clamps the film may be moved on from picture to picture. To facilitate handling a long film strip the apparatus is fitted with a film holder at each side.

The other end of the apparatus has a hinged cover with a spring catch, after the release of which the enlargement paper or postcard may be placed in the frame. It is retained in position when the lid is closed.

The lens in the apparatus has a focal length of 64 mm. and is permanently focused upon the enlargement paper.

The choice of a suitable enlargement paper is a matter of considerable importance. We would specially recommend highly sensitive gaslight papers. A negative of normal density will then require an exposure of about 15 to 30 seconds for the postcard size. In good daylight one-fifth of this time of exposure will suffice under like circumstances.

Variable Enlarging Apparatus for 'Leica' films.

The apparatus is intended exclusively for use with artificial light. It is adapted for making enlargements ranging in all sizes from 9×6 cm. to 24×18 cm. ($3\frac{1}{2} \times 2\frac{1}{2}$ to $9\frac{1}{2} \times 7\frac{1}{4}$ in.) as well as for enlarging any portion of a Leica film. It is likewise available for enlarging kino film pictures (24×18 mm.) up to 18×13 cm. ($7\frac{1}{2} \times 5$ in.).

The apparatus consists of a base plate with upright, along which slides a movable arm carrying a globular metal casing with a 60-watt opal lamp, a film carrier and an objective. The metal casing is well ventilated. The opal lamp furnishes a diffuse light, such as is best adapted for enlarging. The connection to the electric light circuit is established with the aid of a plug contact.

The objective is excellently corrected. It has a focal length of 50 mm. and a relative aperture of no less than F/3.5, which admits of enlargements being obtained at comparatively short

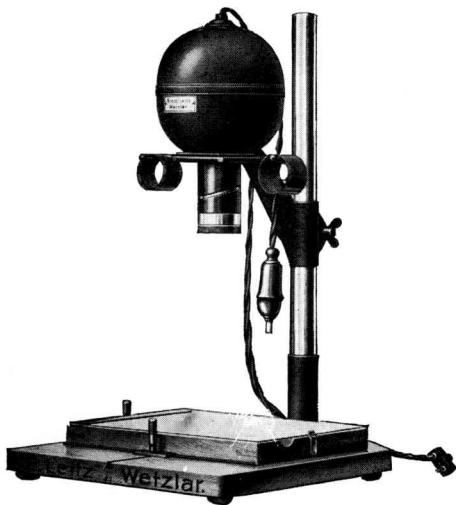


Fig. 16 (about $\frac{1}{10}$ act. size).

exposures, for instance, in the case of an enlargement to 14×9 cm. the required exposure is 8 to 16 seconds, assuming a highly sensitive gas-light paper being used.

The negative film should be placed between the two folding glass plates, which are supplied with the apparatus. The plates should then be pushed into the film carrier, wherein they are held by two springs.

The base is furnished with a separate movable board with fixing clamp for the reception of the paper, which is held down flat and in its required position by means of a hinged glass

plate. In the act of lifting this glass plate several spring pins are made to project on two sides. These serve as position stops for the enlarging paper. Its position is accurately adjusted with the aid of a white card upon which the various sizes are drawn. After sharp focusing, the white card should be replaced by the enlarging paper. Exposure is made with the aid of a switch.

'Eldia' Printing Apparatus

for 'Leica' Photographs.

This apparatus in its improved form, serves for printing the negative film of the Leica Camera upon a positive film, in a manner which renders the sequence of the pictures independent of that of the negative.

Having depressed the fork, commence by lifting off the window plate, and next remove the cover of the apparatus. The end of the positive film strip should be pointed in a slanting position, and then clipped in the direction of the arrow, and with the coated side down, under the flat spring of the spool, having the shorter knurled knob. After winding, slip the other end of the film in the direction of the arrow, under the spring of the second spool, and **fold it over**. Next, put both spools into the apparatus in the manner indicated in Fig. 18. The longer knurled knob will accordingly be situated at the side of the sprocket drum. Now close the lid of the apparatus. The film is made to advance by turning the longer spool knob in the direction of the arrow. During the motion, the teeth of the drum will engage in the perforations. This toothed drum has ratchets for the engagement of a spring catch. Every other ratchet conforms to an advance of our 36×24 mm. Leica picture, while successive ratchets conform to the standard 24×18 mm. kino picture. The negative film should be placed under the fork, with the coated side inwards. The depression of the fork occasions a sufficiently large gap for applying the window plate. When released, the fork presses the window plate home sufficiently firmly. The two sides of the window have a guide groove, for the introduction of a single film picture. This arrangement is not required for longer films.

We supply a separate interchangeable window plate, with an appropriate clearance for printing pictures, of the standard 24×18 mm. kino size. As the film is made to advance, from



Fig. 17 ($1/2$ act. size).

picture to picture, the spring pressure, due to the fork should be released, by depressing it so as to protect the coating from damage. The glass plate in the window should always be properly cleaned.

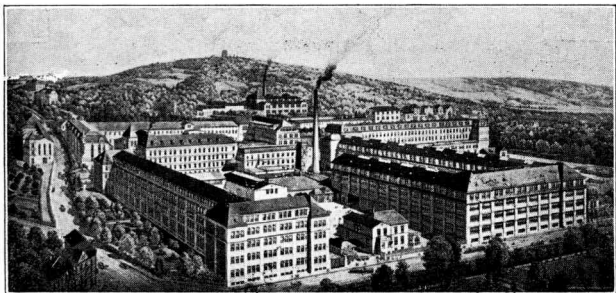
The spools in the apparatus hold a film strip fully 10 feet long.

With negatives of normal density, the positive film requires an exposure of half a second to one second, at a distance of a yard, and when using a filament lamp of 32. c. p.



Fig. 18 ($1/2$ act. size).

A description of our 'Uleja' Roll Film Projection Apparatus for 'Leica' films will be found in a separate pamphlet, which will be sent on application.



Ernst Leitz, Optical Works, Wetzlar.



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