

fer-color  
6-6

*ferrania*

Directions for use

## FOREWORD

*Before using the Fer-Color 6-6 portable projector for the first time we advise you to read this booklet carefully, and to follow step by step these instructions, which we have tried to make as clear as possible.*

*The experience we have acquired as manufacturers of photographic equipments has taught us that most of the repairs are required for small or serious damages caused by lack of experience in the use of the apparatus. Initial failure to obtain good results can usually be pinned down to the same cause. Many amateurs, in fact, think that they know all about the apparatus they turn a few buttons at random or force some levers which appear hard to move and then pick up the book of directions only when they see that something has gone wrong; but often it is too late.*

*If instead you take the trouble to get acquainted with the apparatus, by following the instructions given in this booklet, you will find that there is nothing difficult about using the Fer-Color projector 6-6 and that, what is more, you will be able to obtain fully satisfactory results right from the beginning.*

## I - TO OPEN AND CLOSE THE LID

Pull up the safety levers of the two clips which keep the case closed; the lid can then be opened as far as the vertical position, where it stops automatically (fig. 1). To close the lid it is sufficient to lower it by hand; the two articulated

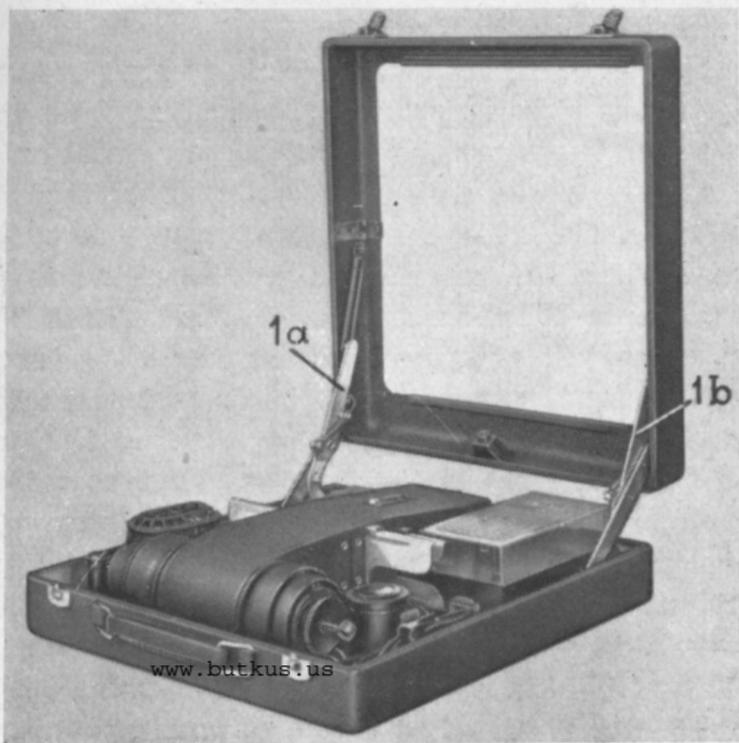


Figure 1 - How to lift the lid

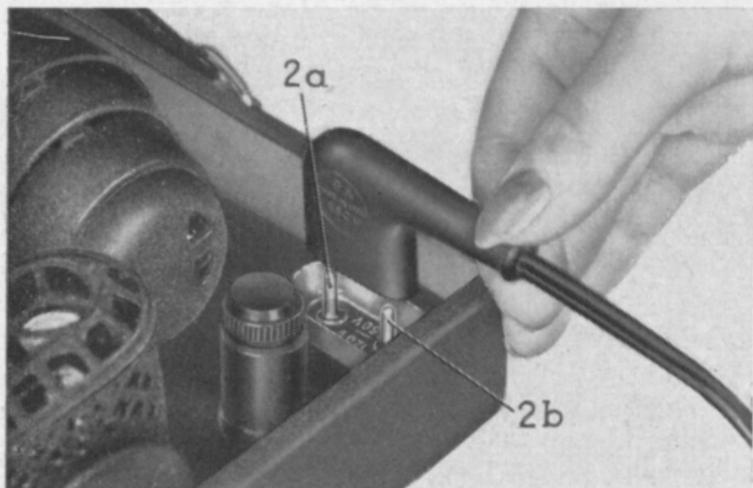


Figure 2 - Connecting the projector with the electric network

parts 1a and 1b which hold it, with springs kept in constant tension, facilitate the manoeuvre.

## II - CONNECTION WITH THE ELECTRIC NETWORK

To connect the apparatus with the electric network use the rubber cable with the special pipe-shaped connector which is supplied with the case. The connector should be fitted over the two pins 2a - 2b (see fig. 2). It is not necessary to know the voltage of the power, as long as it is

between 120 and 260 volts.

To light the bulb **slowly** turn the handwheel 3 towards the front of the apparatus (see fig. 3), at the same time looking at the indications of the amperemeter just beside it.

For some time the hand will remain still, because the amperemeter does not start from zero, but only gives the values in the central part which is of interest; then it will move towards the right.

**Important! Stop when the hand reaches the red line**, which corresponds to 0,92 A. In that position the bulb will yield the normal amount of light it is supposed to emit. If you keep rotating

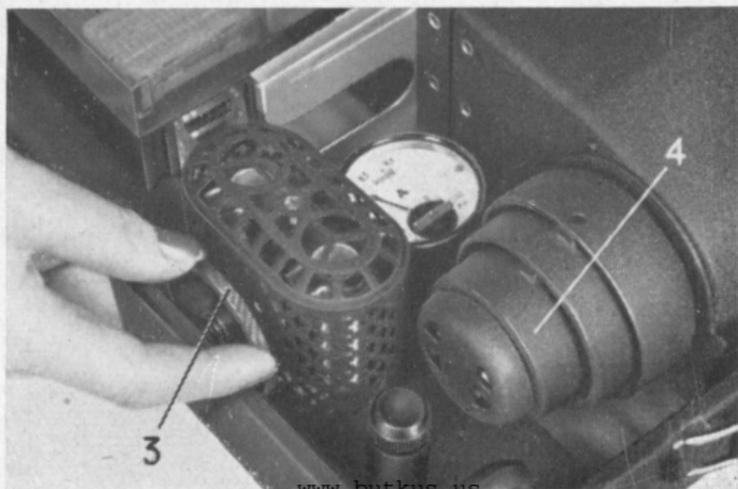


Figure 3 - How to adjust the power

the handwheel you obtain more light, but the bulb is subject to an overvoltage which will make it last less (10% overvoltage will reduce its life to one tenth of normal). To prevent a sudden false manouvre of the handwheel from subjecting the bulb to a sudden overvoltage which could seriously damage it, it is wise to keep the pin 3a (fig. 3a) in the hole corresponding to the average voltage which the network is supposed to have. By doing this, even if the handwheel is rotated completely by mistake, the handwheel stops is a position which is just a little beyond its right position, and it may be corrected without causing any damage to the bulb.

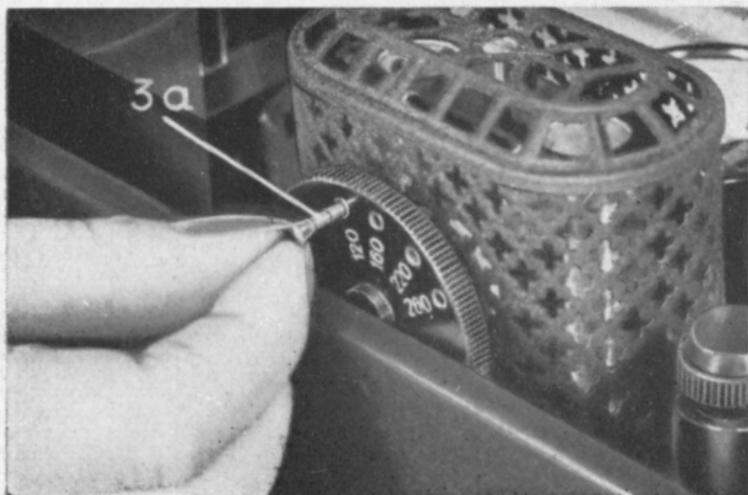


Figure 3 a - Safety pin

One can remember the possibility of regulating the quantity of light emitted by the bulb, always, however, within a certain degree, for the reason given above - when it is desired to improve the rendition when projecting diapositives with imperfect colours; an underexposed diapositive will appear greatly improved if it is projected with a light which is stronger than normal, and, vice-versa, an overexposed diapositive will improve if it is projected with a weaker light.

By turning the handwheel 3, not only is the bulb lit, but also the aspiration electric fan 4, is set into motion; this helps to keep cool the lower part of the projector, especially the lamp.

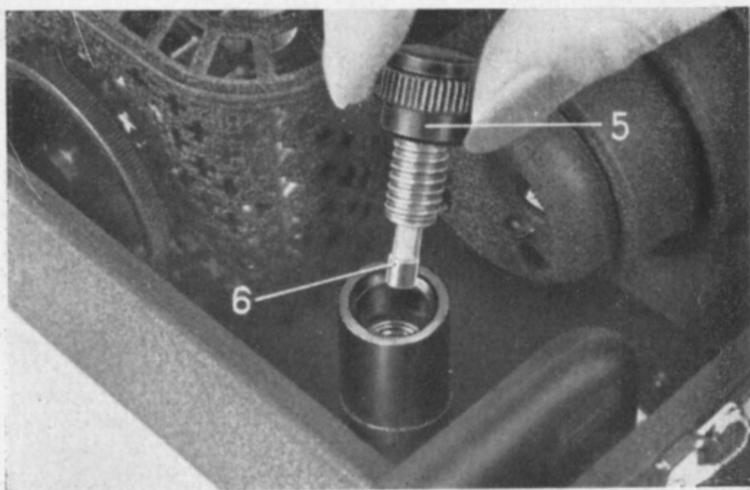


Figure 4 - Safety valve

Once the projection is finished, to put out the bulb and stop the fan you must turn the hand-wheel counter-clockwise (i.e. towards the black part of the projector) as far as it will go. But even if you forget this and you only disconnect the cable, the apparatus will not be exposed to any danger, because the lid of the case, when it is closed, automatically sets back the hand-wheel to the safety position.

The metal receptacle surrounding the current intake is for **grounding** the projector. When this is to be done, as a measure of safety or to comply with local regulations, the special **cable with ground connector** (available on request) should be used.

Between the parts regulating the power and the intake there is a safety valve which is provided so as to protect the apparatus in case of short circuit.

To replace the fuse, it is sufficient to unscrew the stopper 5 (figure 4) and take out of its seat the cylinder 6 which is kept there by clips. Normal fuses of 1 ampère must be used.

**Important!** Before screwing on the stopper with the new fuse it is necessary to have found and eliminated the cause of the damage. One of the most probable causes is the following: when the bulb burns out because the voltage is too high, the two metal supports of the filament sometimes bend so far as to touch; in this case there

is a short-circuit; naturally the inconvenience is eliminated by replacing the bulb.

When the bulb burns out because the voltage is too high, the fuse often fuses too, and it is necessary to replace it.

### III - THE TWO WAYS OF USING THE PROJECTOR

To start the apparatus it is necessary to lift up the main body of the projector, which is fitted on the bottom of the case, by rotating it on its hinged base and pulling it backwards until it clicks into position (see figure 5).

**Important!** In doing this avoid pushing your finger up into the front part of the projector where the mirror placed as will be said later; the surface of this mirror is very delicate and one must avoid touching it.

**Fer-Color 6-6** is primarily meant to be used as a table projector by using the screen fixed to the bottom of the lid when it is opened in a vertical position. One obtains then a splendid image large 30 centimetres (both with 6x6 cm. diapositives and with 24x36 mm. diapositives) which seen at the normal distance of app. 1 metre, gi-

ves the same sensation of a much larger image seen at a proportionately larger distance. Owing to the luminosity of the image obtained on the lid-screen, Fer-Color 6-6 can also be used in a fairly lit room; it is only necessary to have the precaution of arranging the apparatus so that the screen is protected as much as possible from the



Figure 5 - How to lift the body of the projector



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light source of the room (window or lamp). Naturally the image becomes brighter as the surroundings become darker.

Fer-Color 6-6 can also be used as a normal projector though, for this, it is necessary completely to open the cover-screen as follows. Hold the lid with your hand, and with the other hand, as in fig. 6, turn in either direction, as it is preferred, the two buttons 7 which connect the articulated parts with the bottom of the case, thus causing the exit of the relative slideways. The lid can then swing on the hinges 8 and be placed in the horizontal position; for this it is necessary for the case to be near the edge of the table, otherwise it is necessary to put under it any kind of support so as to allow the cover to open sufficiently to avoid light reflections.

In this way even an ordinary wall can be used as a screen, provided it is white and fairly smooth. It is better, of course, to use a proper screen, bearing in mind that those with a beaded surface have a higher luminosity than the normal ones. The distance of the projector from the screen is adjusted according to the size of the image required; with the case at about 1,20 m. away from the screen a picture 1 metre wide is obtained, with a perfect luminosity. The focussing of the lens allows one to keep even greater distances and therefore to obtain larger images, but in these cases the luminosity of the image decreases proportionately; it can be considered however to

be still sufficient with an image 2 metres wide, which is obtained when the distance between the screen and the base of the case is 2,40 metres. To close the apparatus starting from the position for the projection on the wall, it is necessary to repeat the operation backwards, i.e. to connect the two buttons 6 to the opposite slideways. For this, after having lifted the lid with one hand into the vertical position, with the other bring the buttons 6 in front of the respective slideways and turn them, either way, until they snap forward.

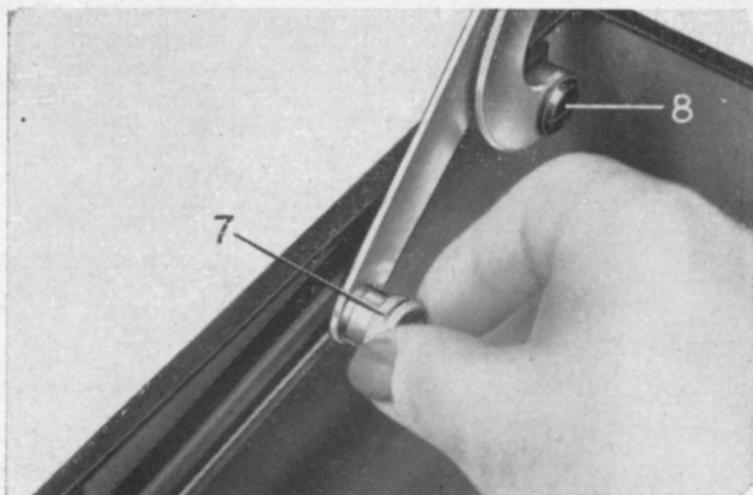


Figure 6 - How to run down the lid-screen

**Important!** Ensure, by making the lid swing backwards and forwards, that the connection is regular i.e. that the pins of the buttons are regularly inserted in the slideways and are not inserted above or under them.

#### **IV - CHOICE OF THE LENS AND OF THE SLIDE-HOLDER**

Fer-Color 6-6 is normally provided with lens 1:2,8  $f=85$  mm. for the projection of diapositives of 6x6 cm. or smaller. When it is desired to project diapositives of Leica size, it is necessary to replace the above mentioned lens with the other 1:2,8  $f=57$  mm. which is supplied on demand and which can be fitted into the special pocket with elastic lid on the side of the projector.

The replacement of the lens is very simple - To take off the lens mounted on the projector, turn it so as to bring the red dot marked on its edge against the other red dot marked on the back side of the projector; in this position it can easily be taken out.

**Important!** When it is necessary to take off the lens, in order to have more space and thus to avoid touching the mirror, it is advisable to pull it down as much as possible, by actioning the focussing button.

In the same way to take off other lens from it seat

it is necessary first for its red dot be against the other red dot on the edge of the plastic support. When putting the two lenses back into the new seats (one on the projector, and the other on the reserve support), remember to turn them a few grades above the dismantling position, to avoid that when carrying the case they may come off. To project 6x6 transparencies (frames of 7x7 cm) use the large slide-holder 9 (figure 7) which is in the lower part of the projector. To project 24x36 transparencies (frames of 5x5 cm) use instead the small slide-holder 10 which is supplied on demand and which is fitted into the highest slit of the projector.

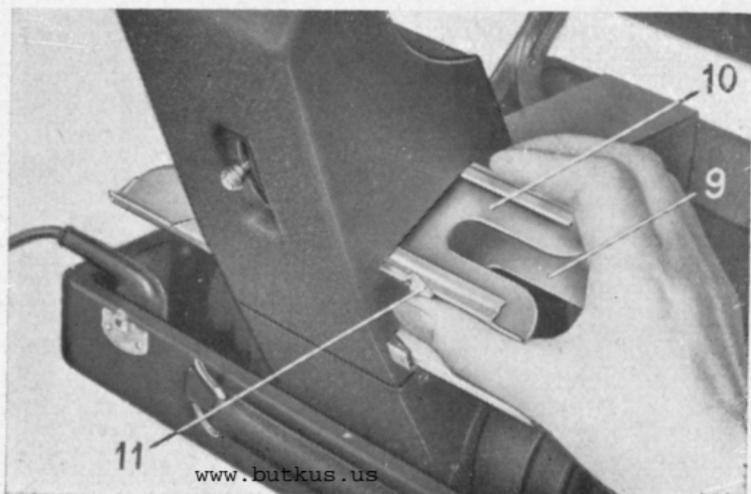


Figure 7 - How to remove the top slide-holder

When the large slide-holder is used it is advisable to take off the other one, which would intercept a marginal part of the ray of light. For this purpose, press its spring 11 (figure 7) and pull it out at the same time. To mount it again it is sufficient to thread it into the apposite slit of the body of the projector and to push it as far as possible until the spring clicks.

When the small slide-holder is used, the large one can also be left in its seat inasmuch as, if the bulb is well centered, in general it does not trouble the projection; should you realize some colour shades on the edges of the screen, take it off.

**Remember** that to pass from the projection of 6x6 transparencies to 24x36 ones, or viceversa, it is not necessary to adjust the condenser accordingly, as this can be used in both cases.

## **V - HOW TO RUN SLIDES THROUGH THE PROJECTOR**

To be used on Fer-Color 6-6 the 6x6 transparencies have to be mounted in the apposite plastic, metal or cardboard mounts, having the standard size of 70x70x4 mm.; the 24x36 or smaller transparencies must be mounted in similar frames measuring 50x50x3 mm.

**Important!** In the latter case even the cardboard frames without glass can be used; but then, to

avoid possible overlapping of images, it is advisable to fit onto the frame special **spacer mask**, which is supplied on demand. In both cases, begin by fitting the first transparency into the guide of the slide-holder and, using the second transparency, push the first one forward until it is centered on the screen; with the third transparency, you then push forward the first two until the first one reaches the arrest at the end of the slide-holder; thus the second transparency will be centered on the screen (see figure 8). Then take out the first transparency by exerting a slight pressure on its border from the bottom upwards, so



Figure 8 - How to slide the transparencies through

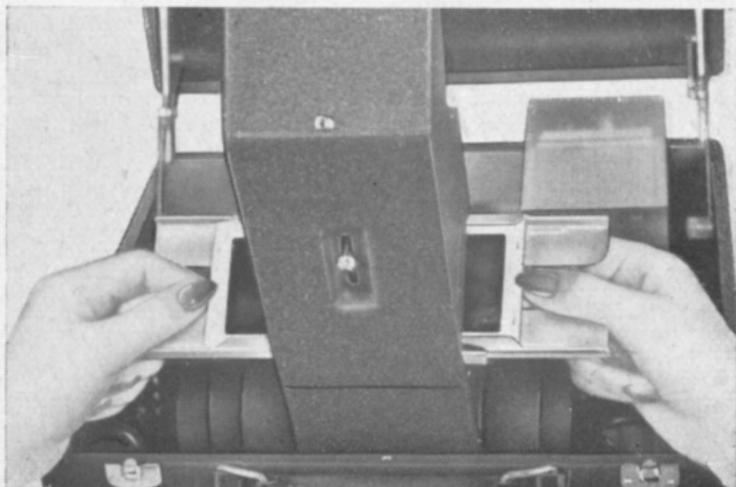


Figure 9 - How to take out the last two transparencies

as to release it from the arrest.

From this moment it is no longer necessary to worry over the position of the transparencies; every time you take one out, you push the other two up to the arrest, by using a fresh transparency. When reaching the end, to push forward the last transparency you can use any of the previous ones, then, to take them both out, arrange them as is shown in figure 9 and push out one from the right and one from the left, using both hands.

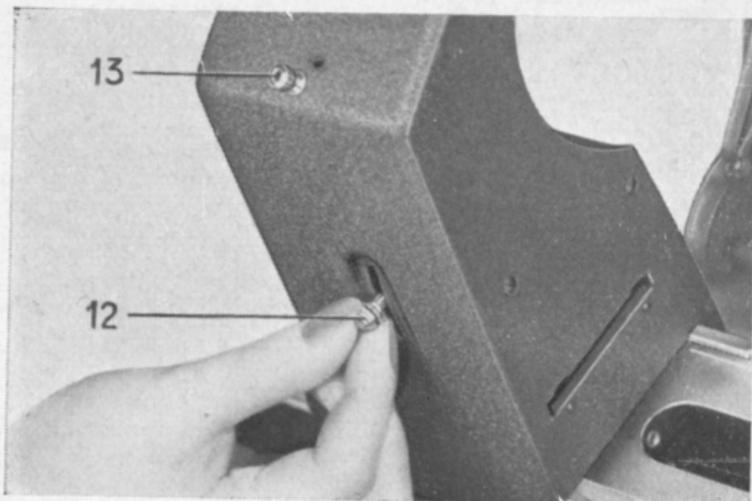


Figure 10 - How to focus the lenses and to adjust the vertical position of the mirror

## VI - FOCUSING

Focussing is carried out by pushing up or down the button 12 (figure 10) until the best outline of the image appears on the screen. If the frames are all of the same kind the focussing done for the first transparency would apply also for the whole series; but often a small quick adjustment is necessary, as the thickness of the glass of the frames is not always perfectly identical.

## VII - ADJUSTING THE MIRROR

Fer-Color 6-6 is supplied with the mirror already adjusted so as to give a perfectly straight and centered image on the lid-screen. If this adjustment, due to use or knocks, is altered, vertical adjustment can be carried out, by carefully the button 13 (figure 10), by which the image is moved up or down.

If a lateral adjustment is also required, and particularly if the image has to be straightened, it is necessary to loosen the two screws 14a and



Figure 11 - How to adjust the lateral position of the mirror

14b (figure 11) which are on the inside of the projector just near the mirror, with a screw-driver.

**Important!** This operation must be carried with the greatest care, **absolutely avoiding to touch the surface of the mirror** which is treated optically and metalized in vacuum, and therefore extremely delicate. It must on no account be cleaned with dusters, alcohol, etc. because these would scratch it, thus reducing its reflecting power. If dust collects on it, this may be removed by means of a very soft brush. Taking these precautions, the mirror can remain unaltered indefinitely.

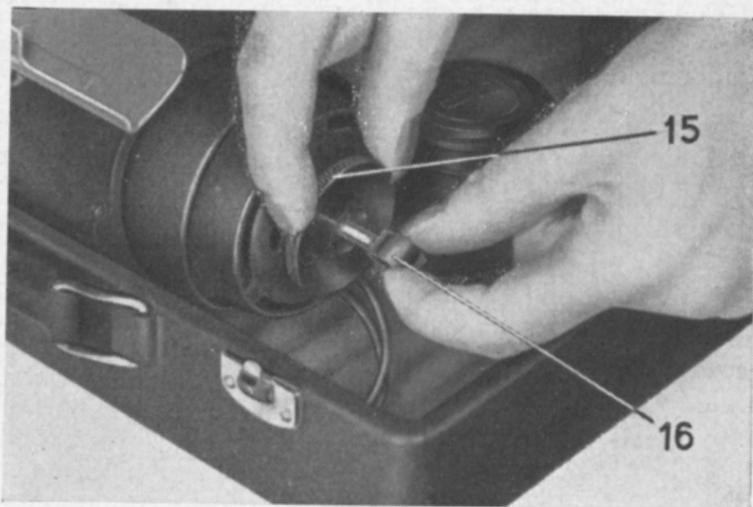


Figure 12 - How to adjust the position of the lamps

## VIII - ADJUSTING THE LAMP

If the screen is not uniformly lighted, but uneven dark (reddish or bluish) zones appear, it is necessary to rectify the centering of the lamp.

While this is lit, turn counter-clockwise the handwheel 15 (figure 12) which loosens the spherical support of the lampholder; by turning the knob 16, the lamp can be moved in all directions, or be made to slide longitudinally.

Once the lamp is centered, without moving the knob 16, but holding it still with your hand, block once more with your left the spherical support, turning the handwheel 15 clockwise.

When you are near the perfect position, it is advisable to tighten a little the handwheel 15, so as to brake the further small adjustment of the support; thus, by blocking also the handwheel the bulb will stay in the position desired more easily. Remember that normally the best position for the lamp is when the cylindrical knob for regulating 16 is arranged with its faces parallel to the axis of the projector, as in figure 13.

## IX - REPLACING THE LAMP

To remove the lamp when it needs replacing, it is advisable to wait until the projector is cool or fairly cool. With your left thumb (see figure

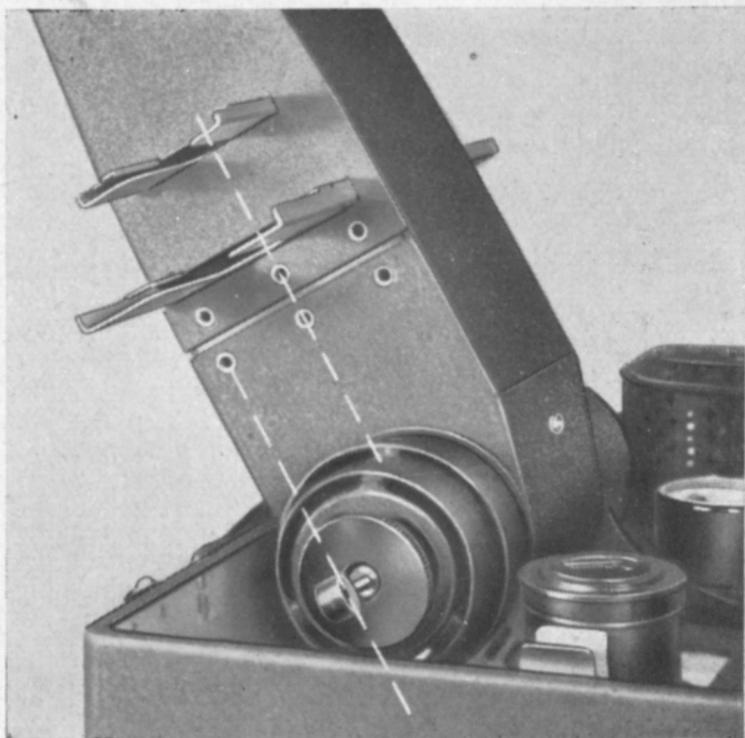


Figure 13 - Correct position of the knob  
for regulating the lamp

14) press the elastic lever which disengages the radiator support 18; then rotate support counter-clockwise as far as it will go. In this position the teeth of the support can pass through the notches provided for the purpose and the whole assembly can be removed. The lamp, which is

fitted as a bayonet, is easily removed by slightly rotating it counter-clockwise and pressing it down at the same time. To re-assemble repeat the above procedure the other way round, without worrying any more about lever 17. The radiator support 18 must be replaced by exerting a slight pressure inwards, and lining up the red dots on

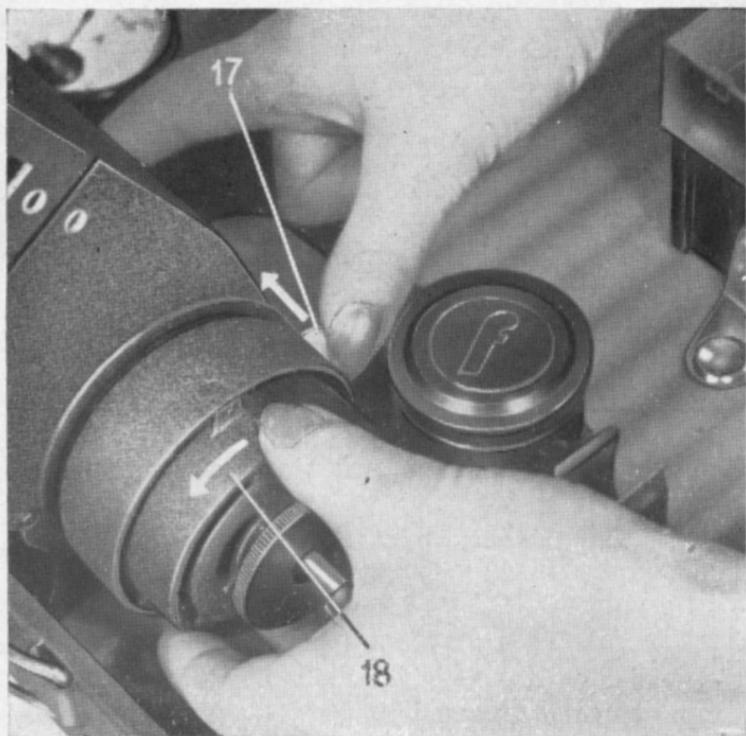


Figure 14 - How to remove the lamp

the support and on the projector body. When the proper position is reached the support should be rotated forward until spring 17 audibly snaps into its seat. Spare bulbs can be obtained from photographic stores. They should be Fer-Color 6-6, 100 watt, 110 volt, base D.C. Bay.

## **X - DISMANTLING THE CONDENSER AND THE ANTI-HEAT SCREEN**

If black marks appear on the screen, on projection, it means that there are specks of dust on the lenses of the condenser, especially on the

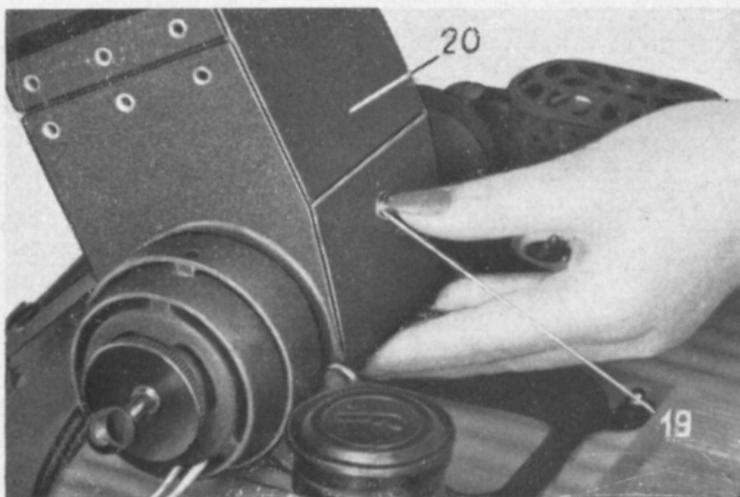


Figure 15 - How to remove the condenser:  
first stage

first top one, which must be removed. This operation should be carried out with the bulb lit very little.

First of all press downwards button 19 (figure 15); the front cover of the projector body 20 can be lifted and taken off. The two lenses of the condenser are then lifted off from their respective guides - the top one 21, biconvex, and the bottom one 22, plano-convex and aspherical, as appears in figure 16. After having taken off the top lens of the condenser, the anti-heat screen below it can also be taken off, by lifting it up a little so as to disengage it from the teeth

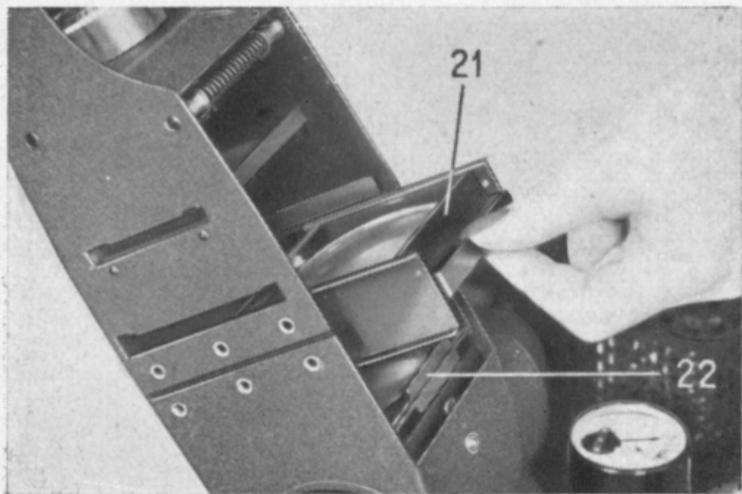


Figure 16 - How to remove the condenser:  
second stage

which keep it into position in front, and then lifted off.

All these optical parts must be treated with the greatest care; one must ensure, above all, that their surfaces are touched as little as possible and are not put on the table where there may be some dust; to clean them use a very soft and perfectly clean rag, if necessary dipped in methylated spirit.

**Important!** A crystal reflector with silver-plated surface is placed inside the body of the projector, on the bottom. Please do not clean this with alcohol or with cloth: should there be some dust, remove it only with a very soft brush.

In re-assembling the various elements of the condenser, remember that the anti-heat glass, if you use it, must be put in first, because it is held in its seat by the lens-holding frame.

The top lens must be re-assembled so that the spring mounted in its frame is looking downwards. See also that the frame of the top lens is perfectly fitted onto the two side guides, and not only lying on them, or fitted only on one side.

To re-assemble the front cover 20, introduce its top border into the corresponding seat, exerting a certain pressure, then press it against the body of the projector; if it is in the correct position, you will hear the click of the spring latch; otherwise, adjust the position of the top part because

it is not correct. The anti-heat screen is not indispensable, because even without it the transparencies mounted between pieces of glass can remain on the projector for several minutes without suffering. It is necessary, instead, when uncovered films are projected on a strip with the special film-holder (see paragraph XV) and especially when microfilms are projected.

As it adds a very slight cyan tonality to the images, it can be taken of it a perfect rendition of the colours of the transparencies is required.

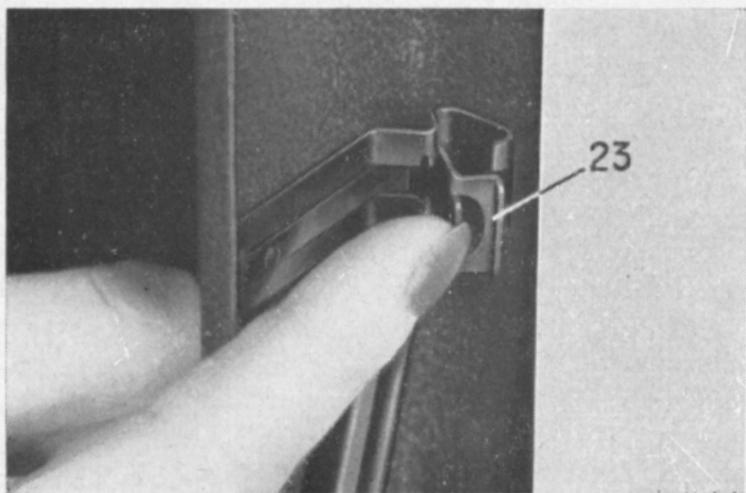


Figure 17 - How to remove the screen

## **XI - REPLACING THE SCREEN**

To dismantle the screen when it needs replacing, open the two side clamps 23, fitted with springs holding it, by lifting it, as in figure 17. Then, with two fingers on the borders of the screen, pull it out, until it comes off the two (top and bottom) guides.

When fitting a new screen, first insert the lower borders on the relative guide; see that it is well centered between the lateral clamps; then holding it so that it expands on the outside, insert also the higher border in the other guide; finally close the two spring clamps on the sides.

## **XII - REMOVING THE FAN**

Normally the fan does not need removing, and it is better not to do so. But if one must do it in order to repair some parts, it is advisable for boratory. The whole fan assembly together with the electric motor can then be removed by rotating it counter-clockwise, until the teeth which hold it against the body of the projector are opposite the relative notches.

## **XIII - CLEANING THE LENSES**

Fer-Color 6-6 lenses are first class and their sur-

faces are blue to prevent reflection of the light. They must be handled with care. Avoid as much as possible to touch them with your fingers; to clean them only use a soft brush or a perfectly soft rag, if necessary damped with alcohol.

#### **XIV - BOXES FOR CARRYING THE TRANSPARENCIES**

The lids of the boxes for carrying the transparencies remain attached to the body only because of the elasticity of the material they are made of. To take the lid off, it is sufficient to exert



Figure 18 - How to open the lid of the boxes for carrying the transparencies

a slight pressure upwards and outwards on the front part; with the box 6x6 this is made easier by inserting a finger under the border of the lid, as is shown in figure 18. To replace the lid, first press down the inside ridges at the back 23a - 23b against the respective seats of the boxes, as appears in figure 19, then press downwards until hear a click.

The boxes for carrying the transparencies can be taken out of the case and easily replaced by others of the same kind; for this it is sufficient

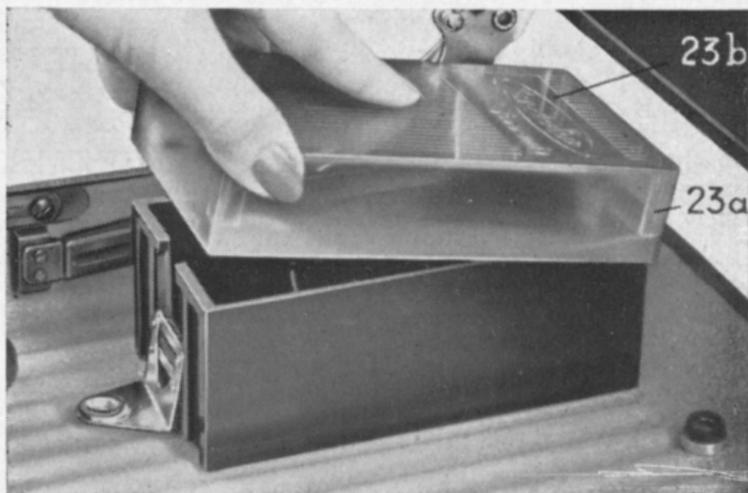


Figure 19 - How to close the lid of the boxes for carrying the transparencies

to press the elastic lever 24 which holds them in place (fig. 20). To replace them see that the projection on their back wall is caught under the opposite square fixed to the bottom of the case and then press downwards until the front projection in turn is fixed with a click under the square 24.

The two seats for the boxes provided in the Fer-Color 6-6 case are both the same and can be used both for the large boxes (for 7x7 cm. frames) and for small boxes (for 5x5 cm. frames). The case can therefore hold either two big boxes, or two small boxes, or a large one and a

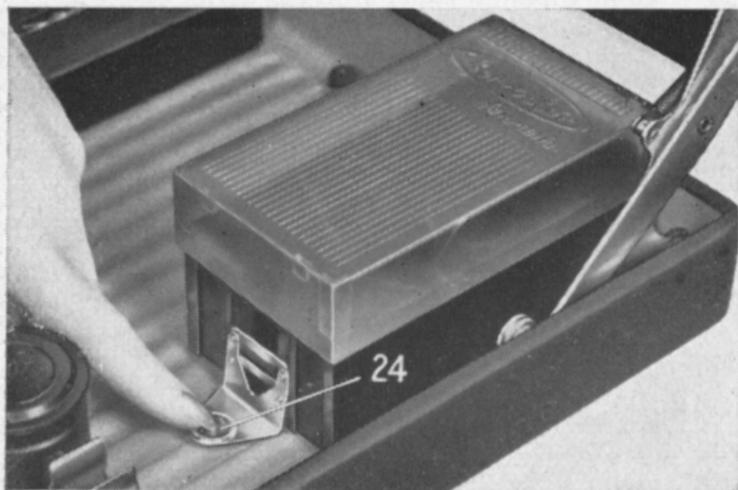


Figure 20 - How to take out of the case the boxes for carrying the transparencies

small one.

You can buy any number of boxes for carrying transparencies separately, and they are the best means of preserving the transparencies, without having to remove them from one box to another for projecting them. For this purpose each box is provided with a card which should be affixed inside the transparent lid and on which can be written the titles of all the transparencies contained in the box, in the order in which they are put in.

## **XV - SPECIAL FILM-STRIP SLIDER**

With Fer-Color 6-6 it is also possible to project roll-films or micro-films, without damaging them, by mounting on the projector the special film-strip slider which can be supplied on request and which can be mounted in a moment without any difficulty in lieu of the normal small slide-holder, as can be seen in figure 21. Instructions for using it are given in the box in which it is sold.

## **XVI - SOME USEFUL HINTS**

Although the projector may be left on for a long time without damage, we suggest putting it off every 25-30 minutes; thus you will prolong the life of the lamp.

After the projector has been on for some time, if you can afford to wait, we suggest doing so for a few minutes before folding it and closing the case, so that it cools down.

Before closing the case see that the boxes for the transparencies are well fixed in their seats



Figure 21 - Film-strip slider

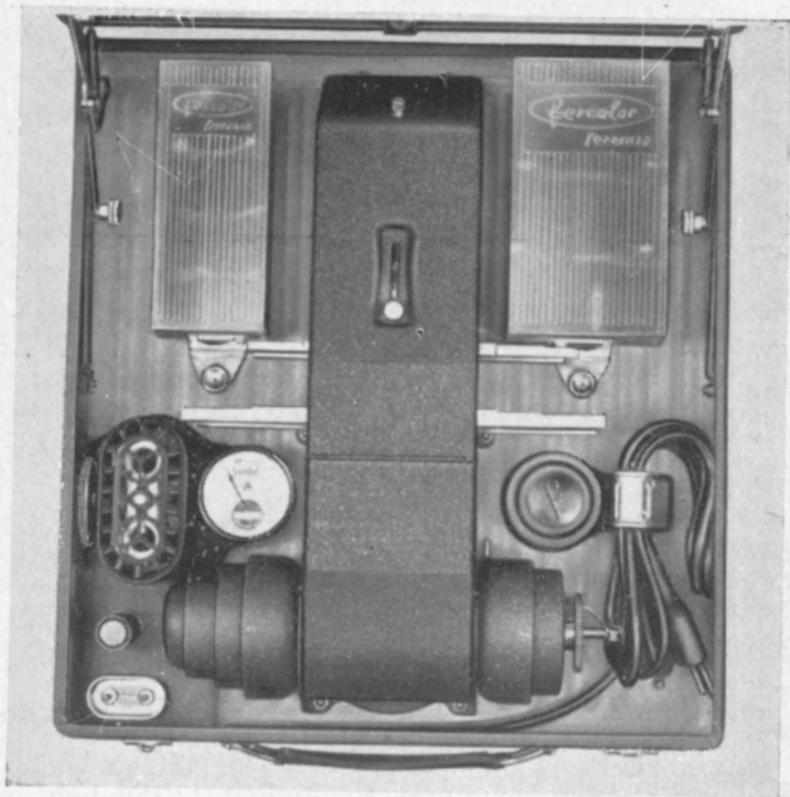


Figure 22 - How to arrange the connecting cable in the case

and that their lids are closed; otherwise carrying the case, the lids and the boxes, not held down in their seats, could damage the screen and other parts.

The connecting cable must be properly folded,

inserted into its plastic ring and arranged in the space allotted for it on the opposite elastic support, as is shown in fig. 22.

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