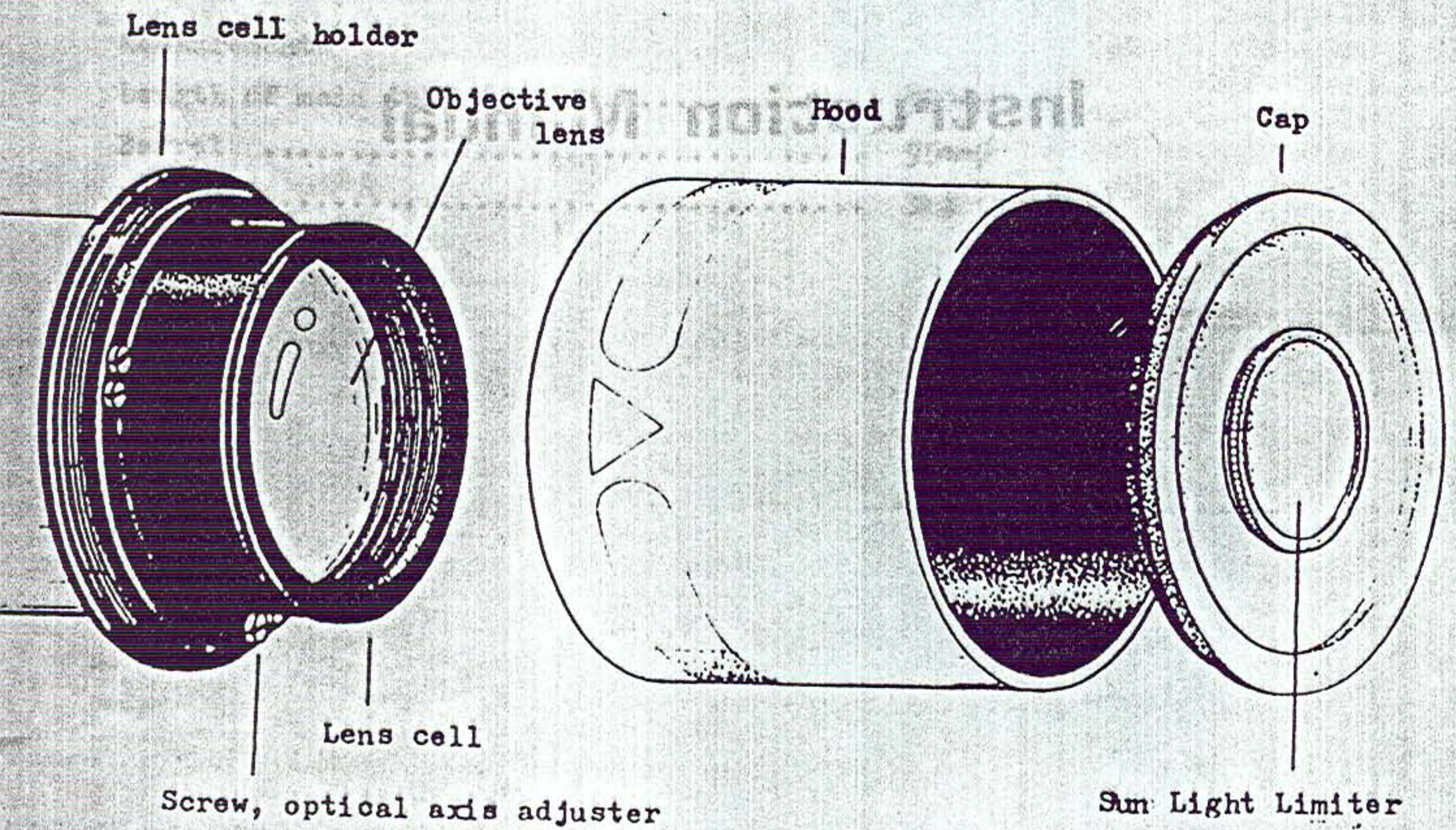
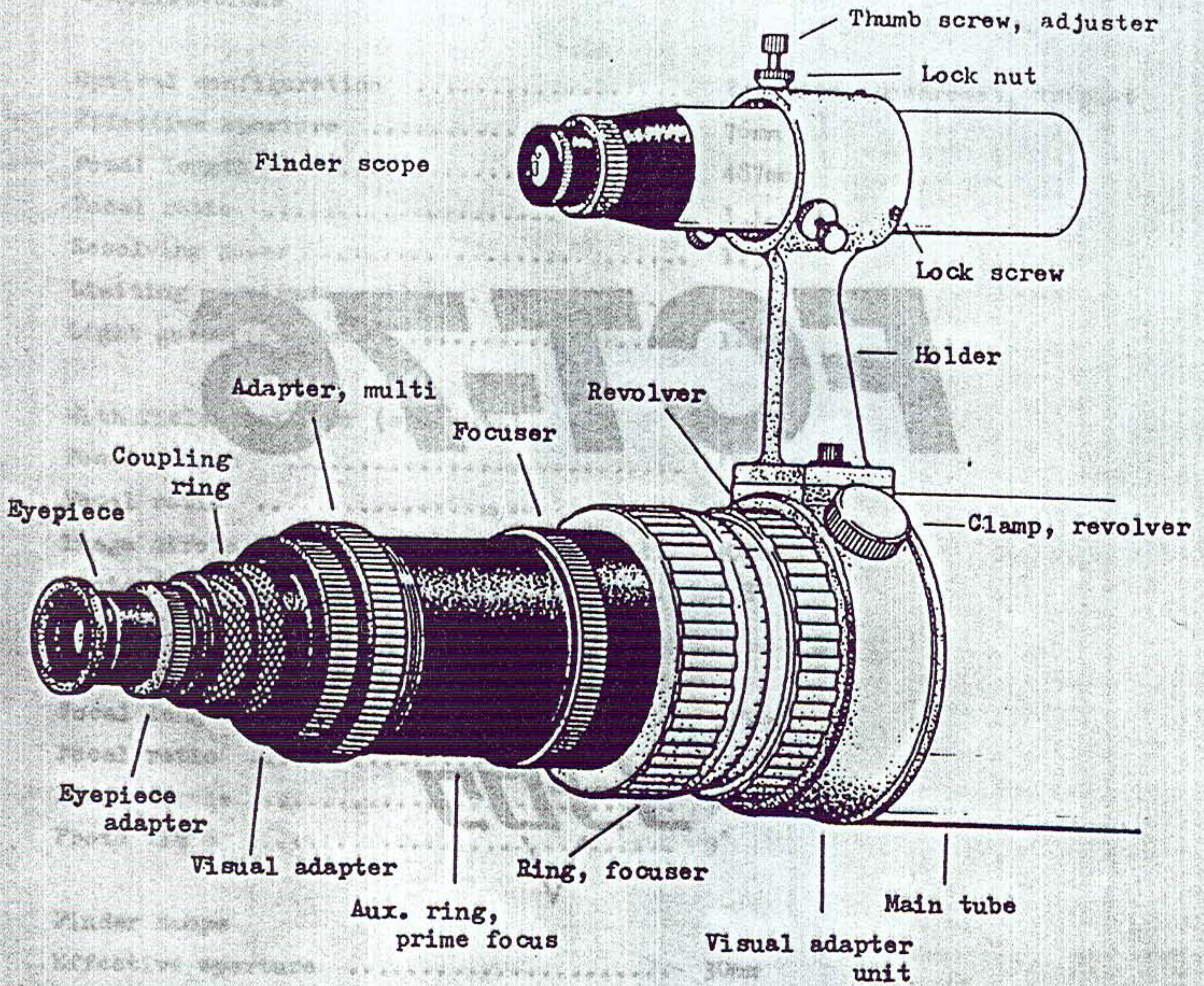


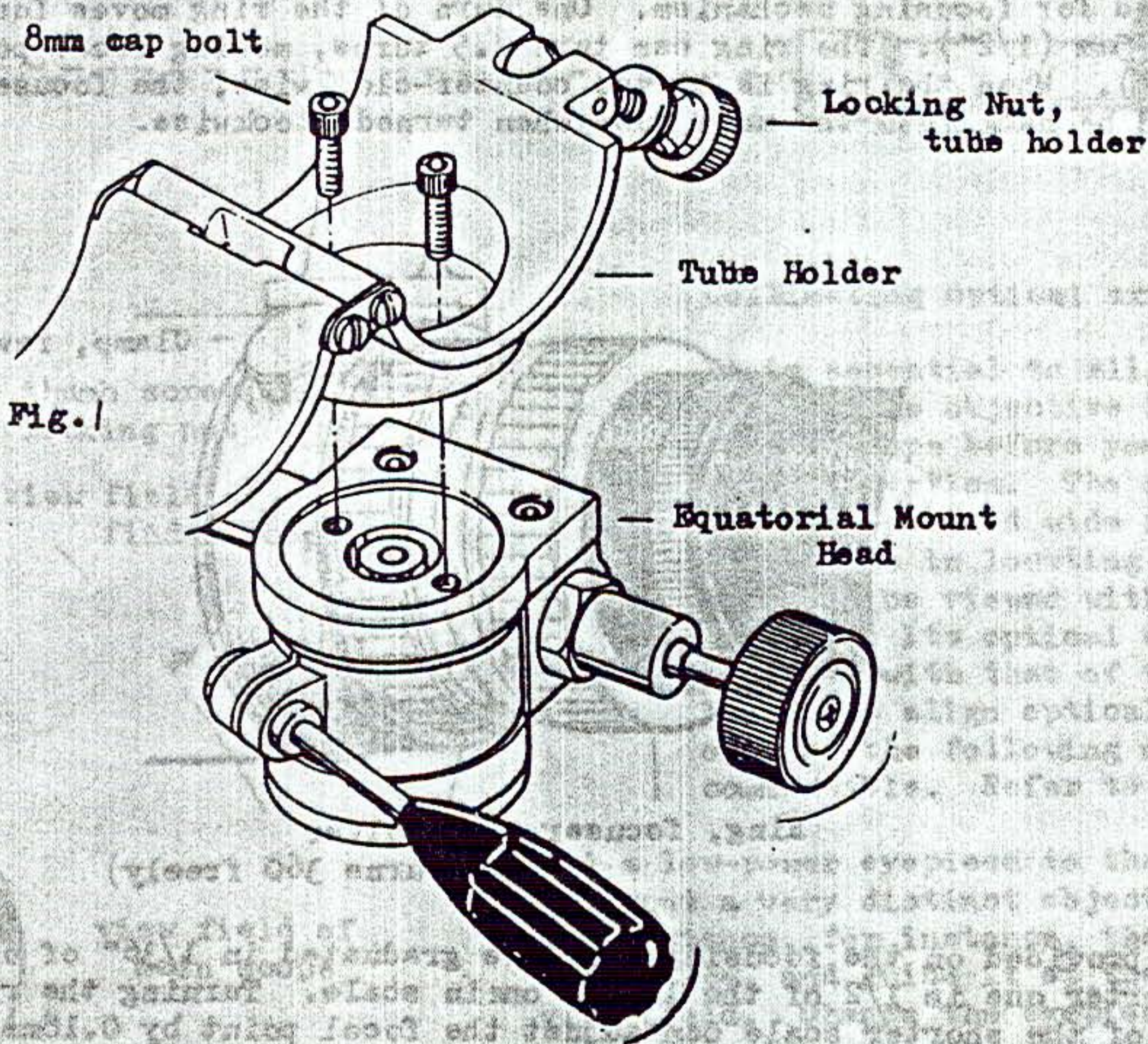
FCT-76



Instruction Manual

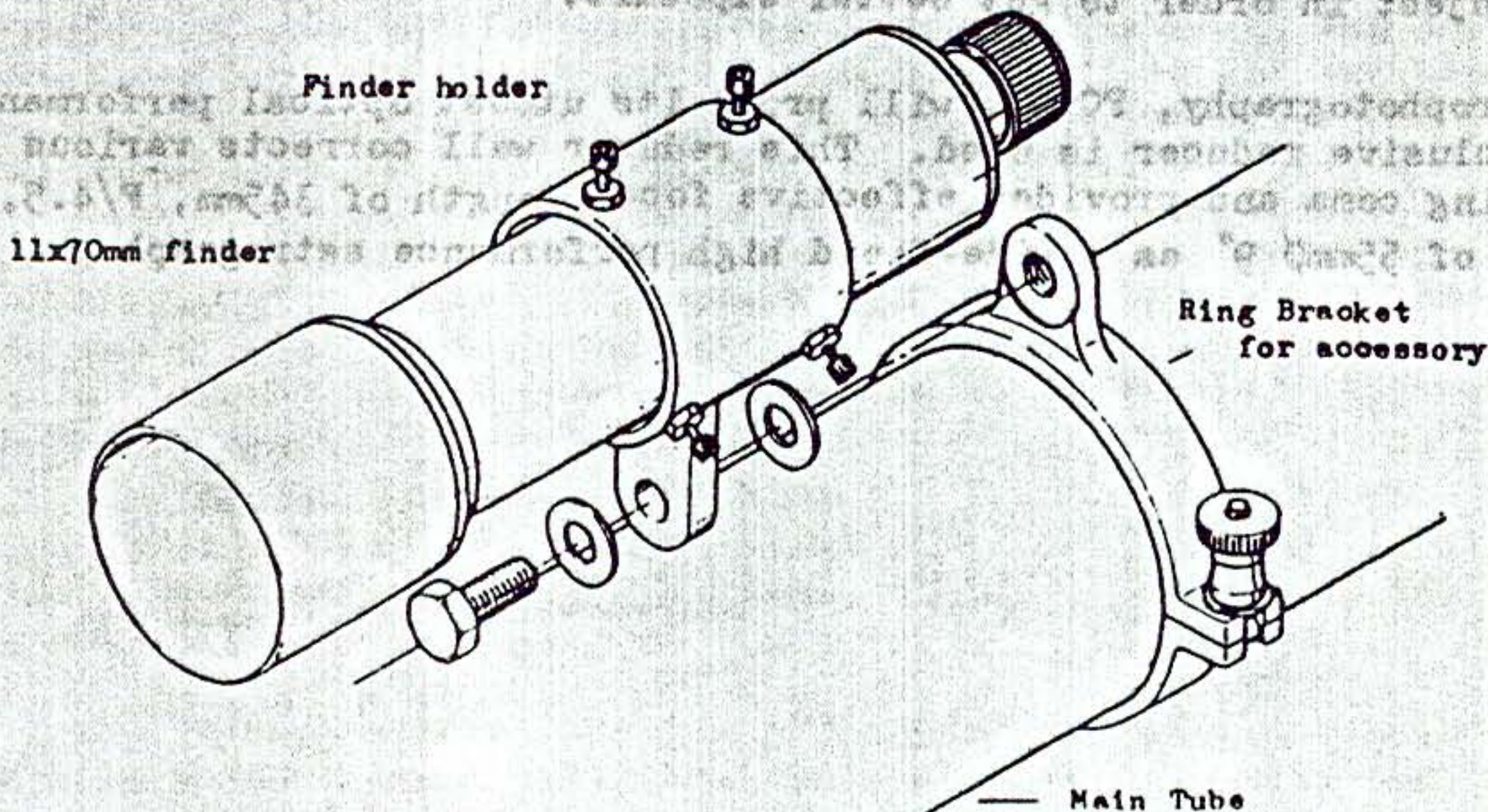


Mounting the main tube on the equatorial mount - Mount the tube holder on the head of the equatorial mount with a pair of cap bolt as shown in Fig. 1. Then, hold the main tube with the tube holder.



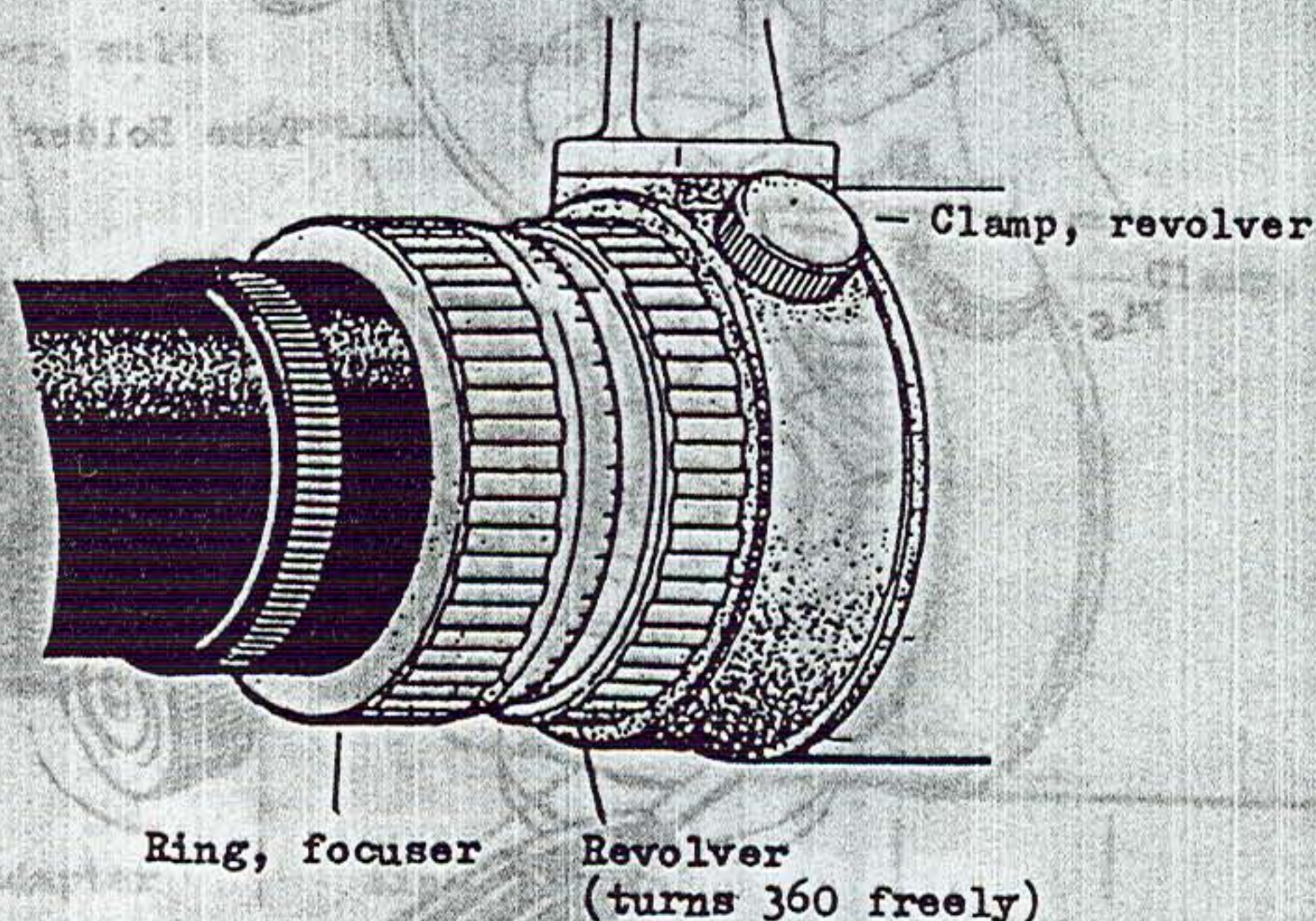
Mounting a larger finder scope on the main tube - To spot a fuzzy object into the view field of the main scope, a larger finder scope is very useful. For example, a 7x50 finder can be mounted on the base of the finder scope in common with a 6x30 finder scope originally provided on the main tube. For more powerful finder scope, an 11x70 finder can be mounted on the main tube with an optional accessory holder band as shown in Fig. 2.

Fig 2



Focusing unit - Revolving device is incorporated in the focusing unit, which makes it very convenient to set camera at any angle to be desired. When the revolver is turned, loosening the revolver clamp, all the parts connected to the focuser unit turn together. Thus, no defocusing will happen even when camera angle is changed after focusing. Be careful not to turn the focuser, mistaking it for the revolver.

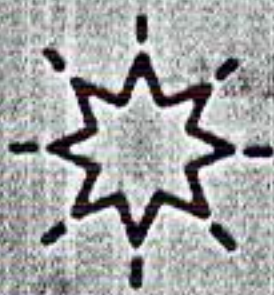
Focusing ring - A straight-forward moving helicoidal focuser ring is employed for focusing mechanism. One turn of the ring moves focal point by 12.75mm (1/2"). The ring can turn 2.5 turns, moving focal point of 30mm (1 1/5"). When the ring is turned counter-clockwise, the focuser unit comes out and be back into the main tube when turned clockwise.



Scales provided on the focusing ring are graduated in 1/36" of one turn and shorter one is 1/2 of the longer one in scale. Turning the ring by length of the shorter scale can adjust the focal point by 0.18mm (7/1000"). When taking a deep-sky photograph, repeat test shots by using these scales and try to find sharpest images offered by the FCT-76 optics. The index is provided at two places on the ring. When camera angle is determined by turning the revolver, read the scale, using the index provided at the place easy to see.

Remember to use the same index when taking a series of test shots by changing the scale position. In the photographic session, take a note of the ambient temperature as well as the scale position. Fluorite lens is sensitive to the ambient temperature so that focal point will be shifted with the change of temperature. So when temperature varies over 3° in photographic session, it is highly recommendable to make another exposure for the same object in order to get better exposure.

In astrophotography, FCT-76 will prove its utmost optical performance, when its exclusive reducer is used. This reducer well corrects various aberrations including coma and provides effective focal length of 345mm, F/4.5, image circle of 55mmØ 9° as a wide-field high performance astrograph.



finder scope

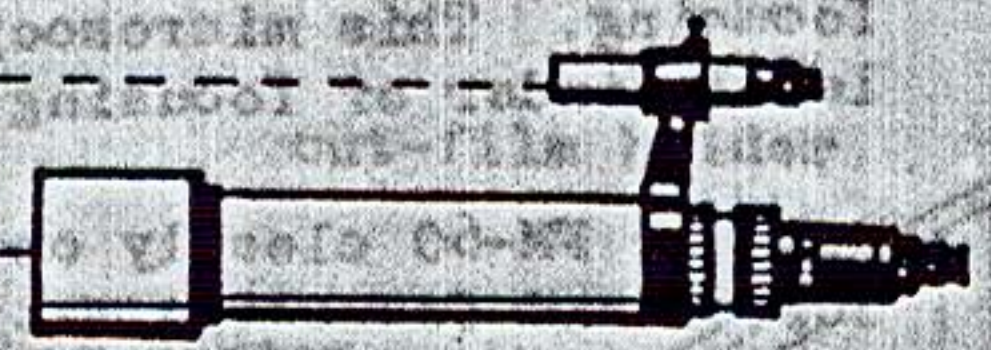
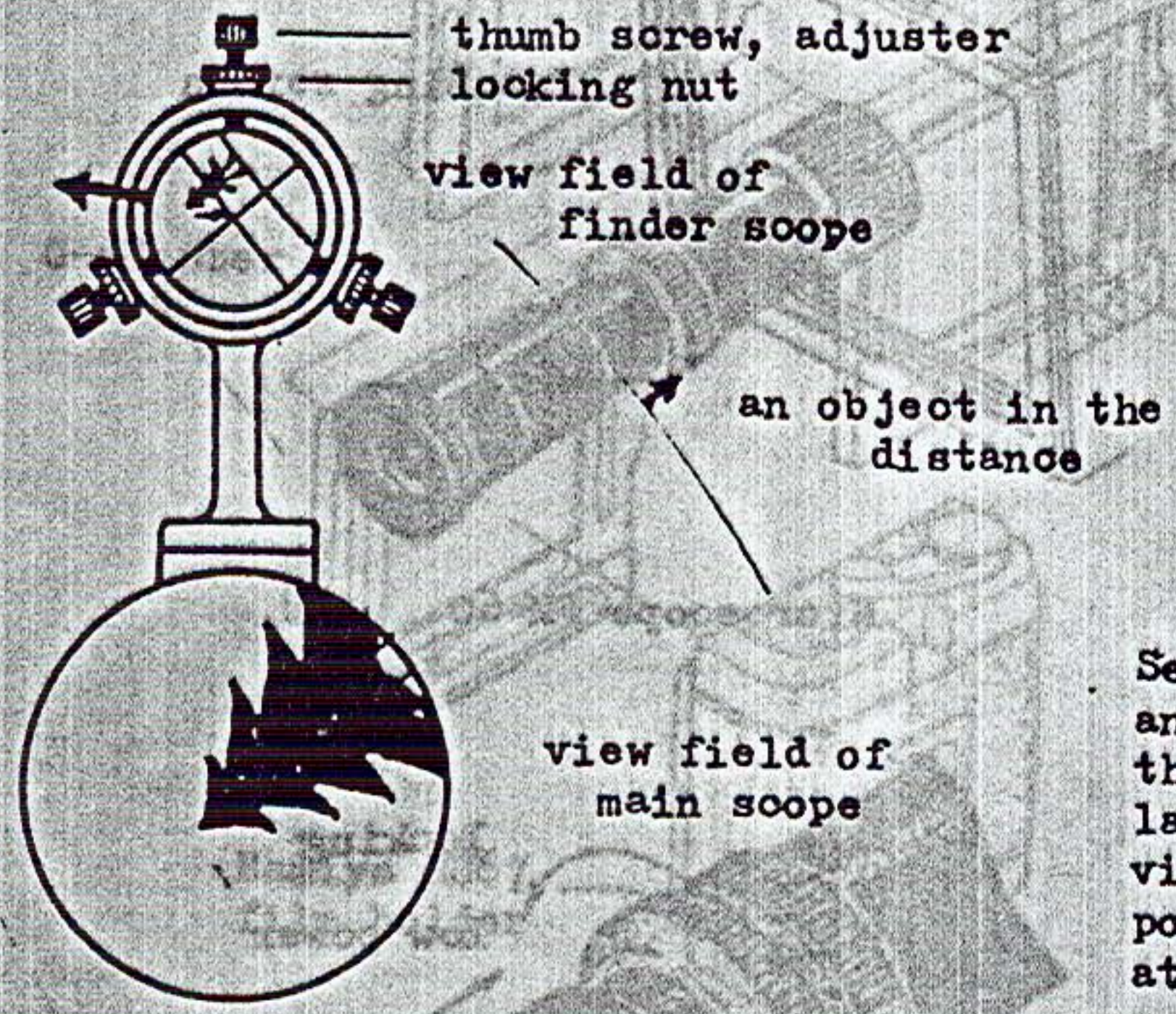


Fig. 3



Collimating optical axis

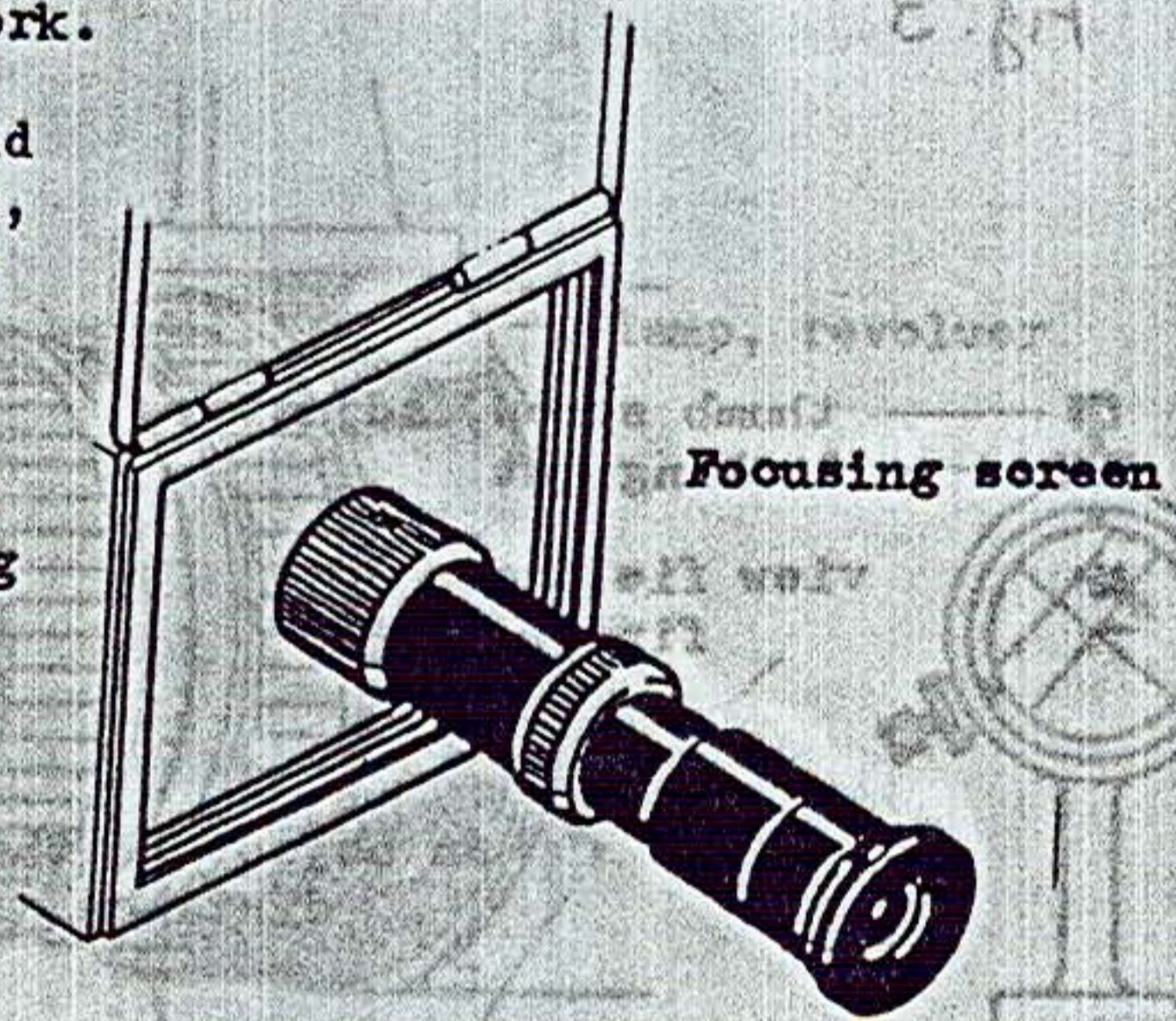
It is essential to align optical axis of the objective lens and the finder scope before you start actual observation. The finder scope is a low-powered wide field telescope which aids in locating celestial objects to be viewed with the main telescope. Its optical axis must be parallel with that of the objective lens. To align optical axis of both optics, the following method is recommended. Refer to Fig. 3.

Set a low-power eyepiece to the main scope and spot a very distinct object located in the distance, for instance, the top of a large tree, and guide it at the center of view field. Change the eyepiece to a high-power one with reticle and keep the target at the cross point of the reticle.

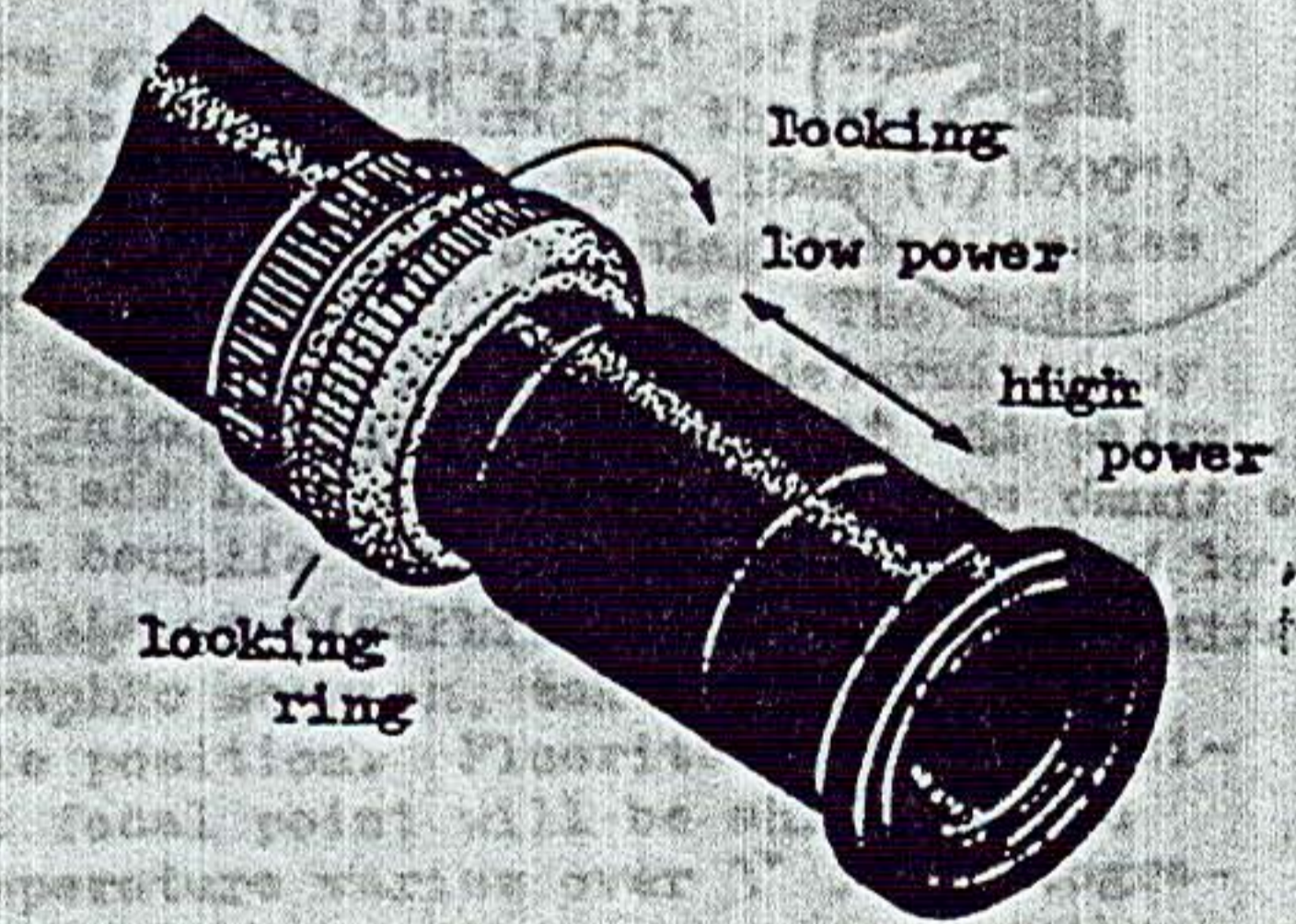
Then, guide the target at the cross point of the reticle of the finder scope, adjusting three thumb screws properly and hold the finder firm by locking nut. Now the optical axis of both optics is correctly aligned and your telescope is ready for exciting observation. It is rather difficult to align optical axis at night. Do it in the daytime.

Focusing - Very careful focusing is required to get the sharpest images that FCT-76 can provide. Use 3rd magnitude star or so for focusing object. Brighter ones are not suited for focusing purpose. When a 35mm SLR camera, of which finder screen is interchangeable, is used, use a finder screen with full mat glass. If it is not interchangeable type, focus the image of the star at the center area of mat glass provided with your camera. Optional focusing microscope FM-60 is designed to enable anybody to make sharpest focusing. This microscope is very useful for focusing with Mamiya 645 waist-level-finder or focusing screen of Mamiya roll film holder.

Put the FM-60 closely on the focusing screen and focus the mat glass plane before entering into photographic work. Then, guide the focusing star at the center of the focusing screen and focus the star at its sharpest image, turning the helicoidal focusing ring and watching the star through the FM-60. When a 35mm SLR camera is used for astrophotography, put the mat glass provided with the FM-60 in the guide rail of film before loading film and focus with the same procedures as explained in the above.



Microscope FM-60



How to change magnification - In the FM-60, magnification can be changed by adjusting the stroke of the sleeve. Loosen the lock ring by turning it counter-clockwise and adjust the sleeve. The stroke of the sleeve ranges 0 - 35mm and the larger the stroke, the higher the magnification, ranging 42X - 73X. The best magnification should be determined in a series of trial use, up to user's eyesight.

How to use the FM-60 as an erecting eyepiece - Screw-in a sleeve provided into the top of the FM-60 and put the FM-60 into the eyepiece adapter of your telescope as shown in Fig.4. Then, it can be used as an erecting eyepiece for terrestrial observation. It turns a variable eyepiece with fl 6mm - 4mm by adjusting the stroke of the sleeve.

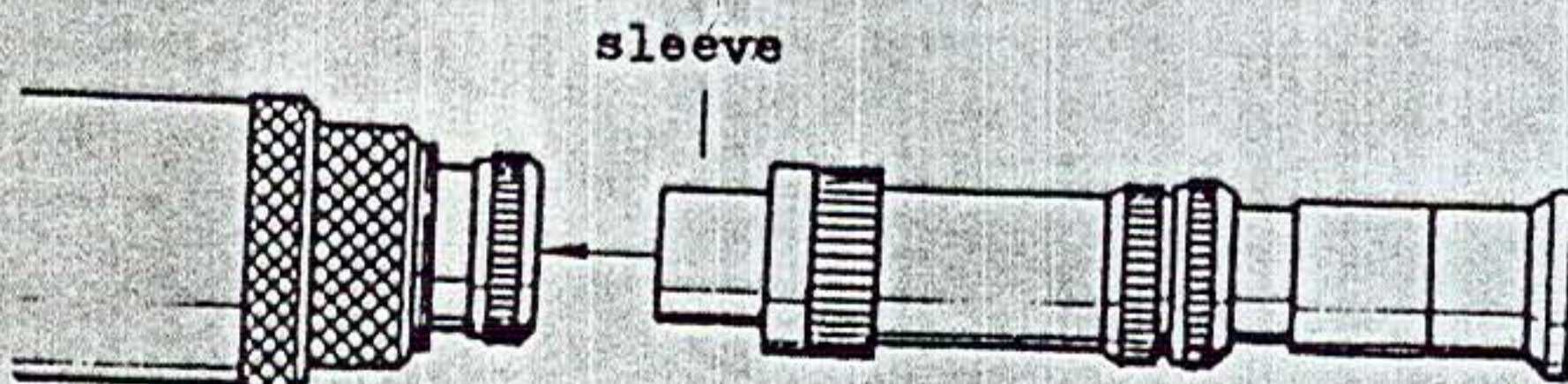
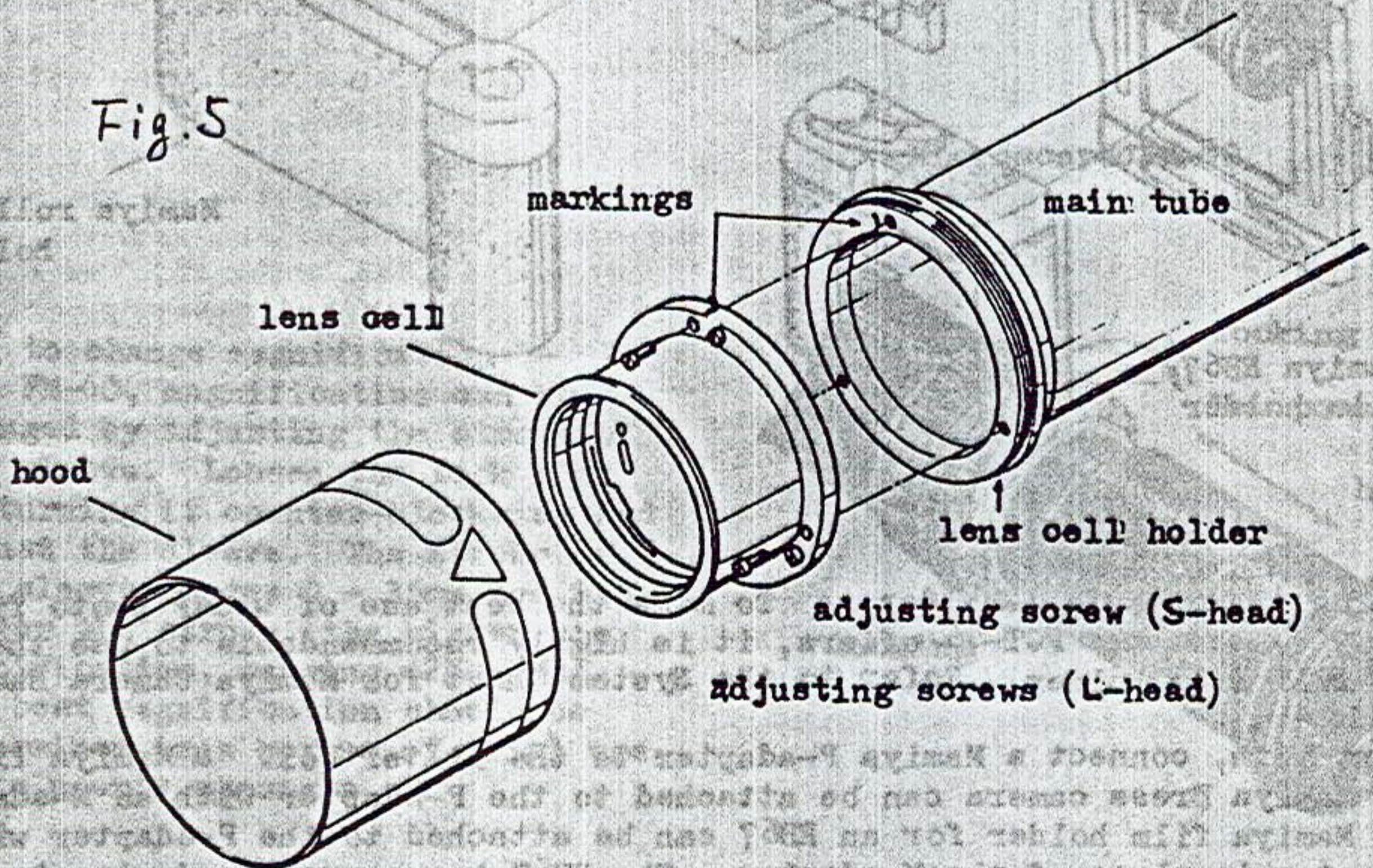


Fig. 4

Maintenance for the lens - It is highly recommended to keep the lens always clean. Blow out dust on the lens with a blower whenever you finish your observational works. When the lens should get your finger prints or something oily materials on it, clean them very carefully with soft cloth with a bit of lens cleaner available in a camera shop.

When your lens is needed to be cleaned, taking the lens out from the cell, follow the procedures mentioned below.

1. Take out the hood from the main tube by turning it counter-clockwise.
2. Loosen three adjusting screws (L-head) and take out the cell. For your convenience sake, make a mark on the cell holder and on the cell as shown in Fig.5. These marks will help you to reset the cell exactly in place. Don't move the other three screws (S-head).
3. After cleaning, set the cell in place with the screws, referring to the marks. There will be no chance that the pre-aligned optical axis gets out of order unless the S-head screws are turned.

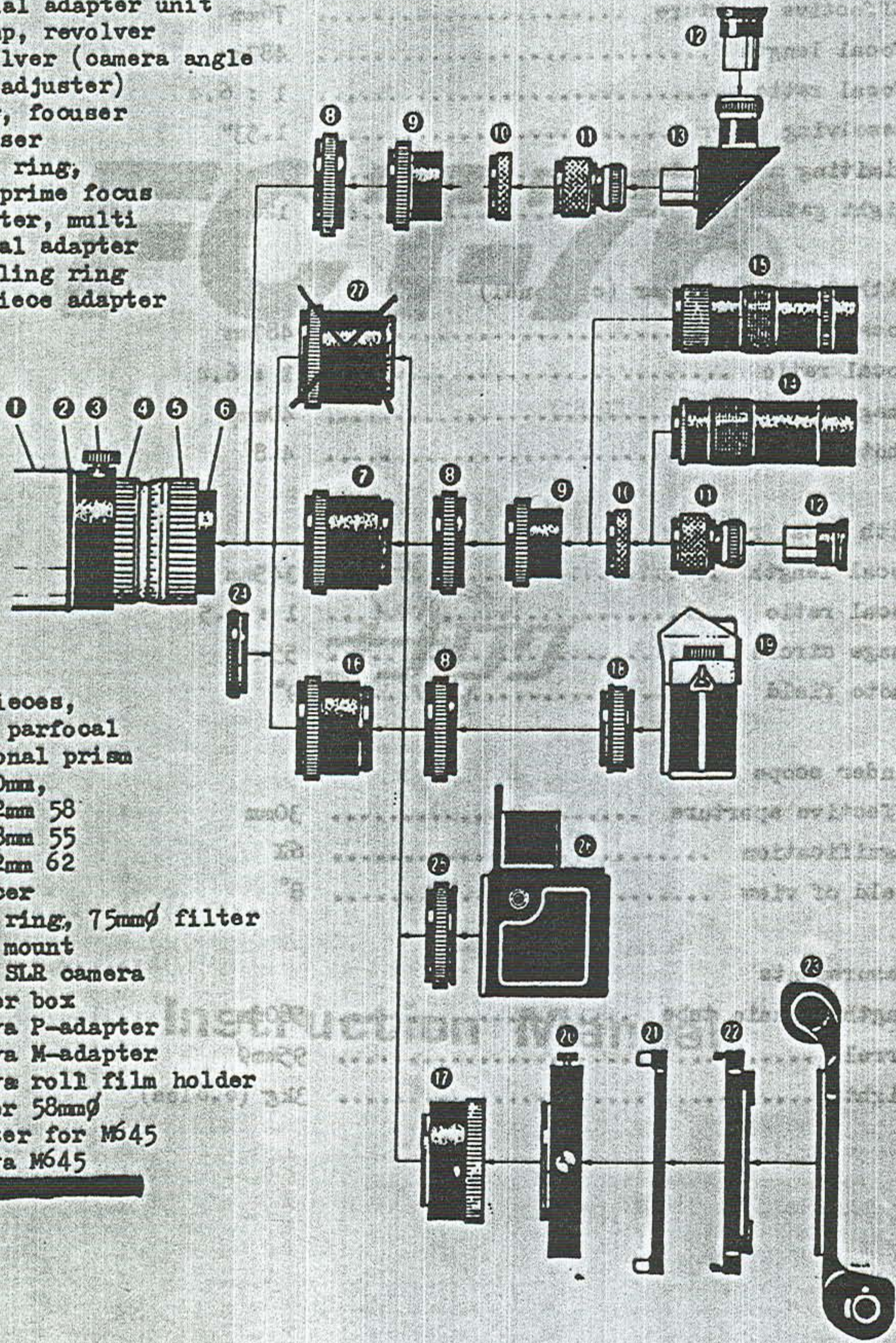


Specifications

Optical configuration	Fluorite apochromat, triplet
Effective aperture	76mm
Focal length	487mm
Focal ratio	1 : 6.4
Resolving power	1.53"
Limiting magnitude	11.2
Light gathering power	120
With field flattener (optional)	
Focal length	487mm
Focal ratio	1 : 6.4
Image circle	40mm ϕ
Photo field	4.8 $^{\circ}$
With focal reducer	
Focal length	345mm
Focal ratio	1 : 4.5
Image circle	55mm ϕ
Photo field	9 $^{\circ}$
Finder scope	
Effective aperture	30mm
Magnification	6 \times
Field of view	8 $^{\circ}$
Measurements	
Length of main tube	580mm
Barrel	95mm ϕ
Weight	3kg (6.61lbs)

●FCT-76 System Chart

1. Main tube
2. Visual adapter unit
3. Clamp, revolver
4. Revolver (camera angle adjuster)
5. Ring, focuser
6. Focuser
7. Aux. ring, prime focus
8. Adapter, multi
9. Visual adapter
10. Coupling ring
11. Eyepiece adapter



12. Eyepieces, parfocal
13. Diagonal prism
14. Or 40mm, Er 32mm 58 Er 28mm 55
15. Er 32mm 62
16. Reducer
17. Aux. ring, 75mm ϕ filter
18. Wide mount
19. 35mm SLR camera
20. Filter box
21. Mamiya P-adapter
22. Mamiya M-adapter
23. Mamiya roll film holder
24. Filter 58mm ϕ
25. Adapter for M645
26. Mamiya M645