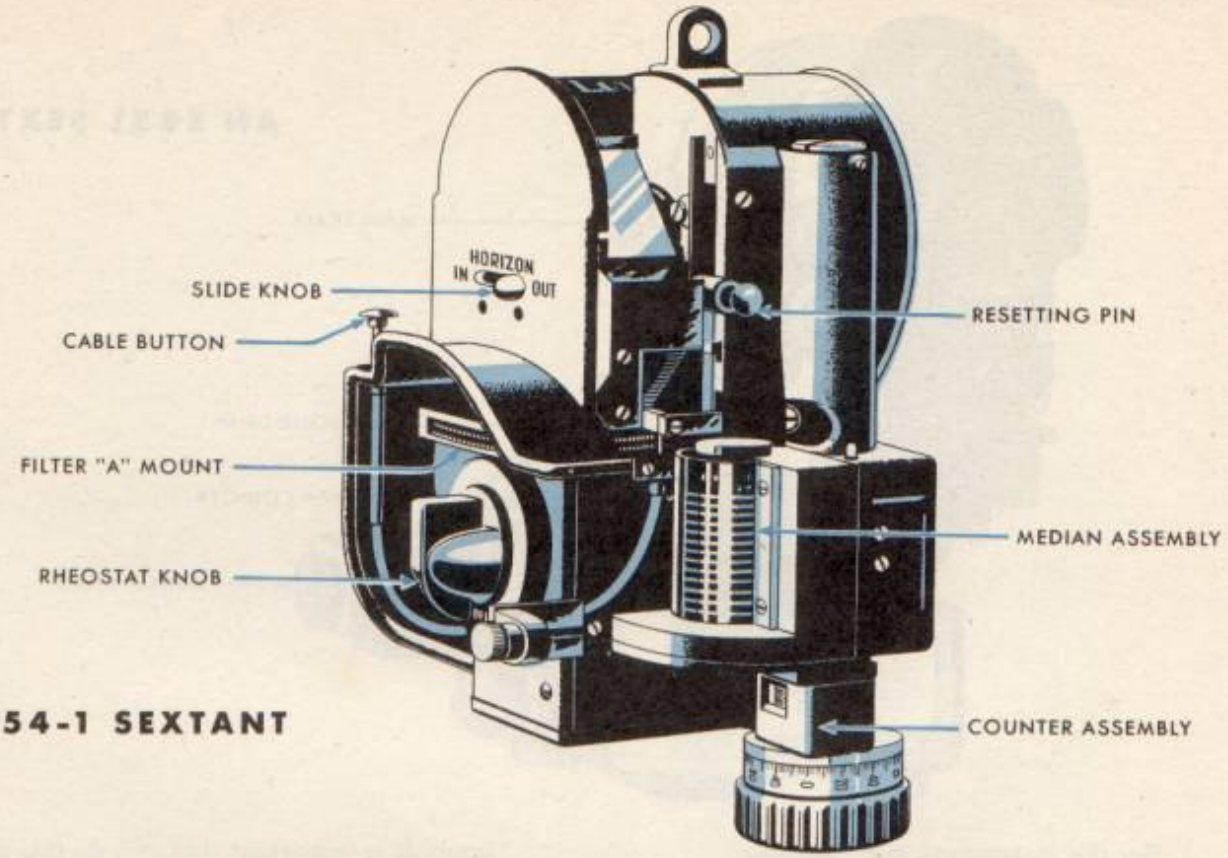

AN 5854-1 SEXTANT

shutter automatically moves into the field of view and obscures your vision.

11. To obtain the final avérage altitude, combine the counter reading with the main scale reading. (Do not read the scale drum; this indicates only the final altitude setting.) For example, if the counter reads 6° 35′ and the main scale pointer is between 4 and 5, the final reading is 46° 35′. Remember, the final main scale reading is within 2° of the average reading.

Bubble

In this type of sextant the star image and the bubble image are superimposed directly in the optical system and not by reflection, as in the A-10 series. You cannot see the star through the bubble, so use the cylindrical lens to astigmatize the star image, i.e., draw it out to a line instead of a point.

Optics

The real field of the instrument is 12°. Two-power magnification is built in.

Note that a rotatable polarizing filter in the eyepiece is designed to reduce horizontal (water) reflections of the sun at low altitude.

For general use, and always at night, remove this filter by pulling it straight out of the eyepiece. There is a finger ring attached to it for this purpose.

A horizon prism allows you to use the natural horizon.

See T.O. 05-35-22.

AN 5854-1 SEXTANT

Operation

Use the AN5854-1 sextant with the appropriate support arm. Hold the instrument by the handle, which is part of the sideplate, and by the graduated drum at the lower left side of the instrument. Operate the median averaging device with the index finger of your right hand. Press the cable button at each reading. Readings are recorded by the median assembly and are continued until the shutter automatically cuts off the field of view. Then, rotate the graduated drum until the median index is under the index line of the median assembly window, and read the angular altitude from the sextant scales.

To prevent any of the indexes from disappearing behind the median drum when you are determining the setting, the median drum is geared to turn half as fast as the graduated tangent screw controlling the sextant prism. This gear reduction also reverses

the direction of motion of the median drum from that of the tangent screw.

Spread the series of observations over the particular oscillation cycle of your airplane. In normal flying conditions, space a series of 15 readings at intervals of approximately six seconds between readings. In extremely rough air, two series of 15 readings are recommended with an interval of approximately six seconds between series. Average the two medians to obtain an average of the 30 readings. The average celestial time for the series of 30 readings is the average time from the start to the finish of the observations.

Another method of using the averaging device is to rotate the series of indexes until they seem to be distributed evenly on both sides of the fiducial line. This reading is a good average.

Clear the median assembly and load the shutter for another series of readings by pressing the resetting pin and rotating the indexes back to the index fiducial line in the center of the window.

For use with the sun and bubble horizon, the instrument is equipped with five combinations of filters for various sun intensities or field brightness. With the real horizon reflector IN, you can use the astigmatizer lens to astigmatize the sun across the bubble.

You can view celestial bodies at night either through the clear openings or the astigmatizer lens in the filter mount.

Radium paint provides such adequate dark field illumination of the artificial horizon bubble at night that you rarely need electric light. However, variable electric light intensity is available to boost the level of illumination.

Optics

The shutter is a thin sheet of metal that automatically cuts off the telescope field at the end of the observation. The shutter drops on the sixteenth reading and not at the end of the fifteenth. The shutter is mounted directly above the objective lens and the filter mount assembly.

The real field of the sextant is 12°. Two-power magnification is built in. You sometimes have difficulty in locating the desired star, as is the case when you use any horizontal-viewing sextant. See procedure outlined under Optics, A-10A sextant.

All scales are illuminated. A red bubble filter is supplied to provide a red bubble for contrast against the sky. This is particularly suitable for use against a moonlit cloudy sky.

See T.O. 05-35-27.

WATCHES

In accordance with Technical Order 00-30-61-2 you are entitled to three watches: the A-11 hack watch, the A-8 groundspeed timer, and the AN5740 master watch. These watches are the best products the American watch industry can make in the quantity the Air Forces demand. The life of your watches and the performance they give you are largely a matter of the care you give them. You should take the following simple precautions:

1. Carry your master watch in the metal case provided. This protects the watch from shock and from large magnetic fields. Always try to carry the watch in a horizontal, face-up position.

2. Wind your master watch regularly and determine its rate so that you may gain confidence in its performance. This watch is one of the finest timepieces made today. It is adjusted for position and for temperature.

If you anticipate flying in extreme cold (below −20° C) it is advisable to carry the watch on a piece of string inside your flying clothing. The slight inconvenience which this causes in reading the watch is greatly outweighed by the improved rate of the watch.

3. See that the screw-back and bezel of the watch are tightened securely at all times.

4. **Important: Your wrist watch is not waterproof,** so do not expose it to excessive moisture. The latest hack watches are supplied with a three-piece, dust-tight case. This simplifies maintenance and the rate of the watch is more constant. Take particular care to prevent water from running down your wrists after washing your hands; it collects around the stem of the watch.

5. Inspect your watch strap and strap pins occasionally to eliminate any chance of losing the watch.

Do not attempt to repair sextants or watches. They are delicate instruments and require expert adjustments.