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Figure 1 - 'Top Section' top side plan

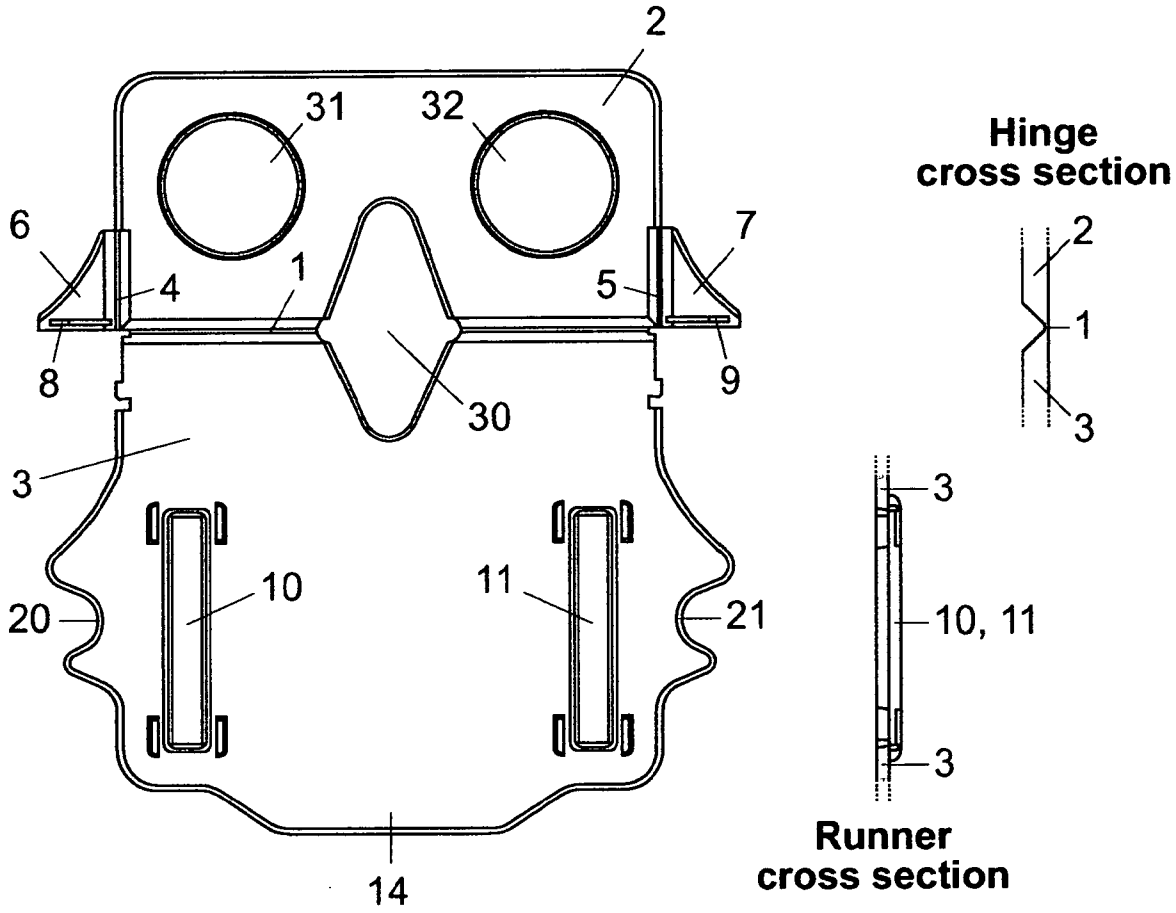


Figure 2 - 'Top Section' underside plan

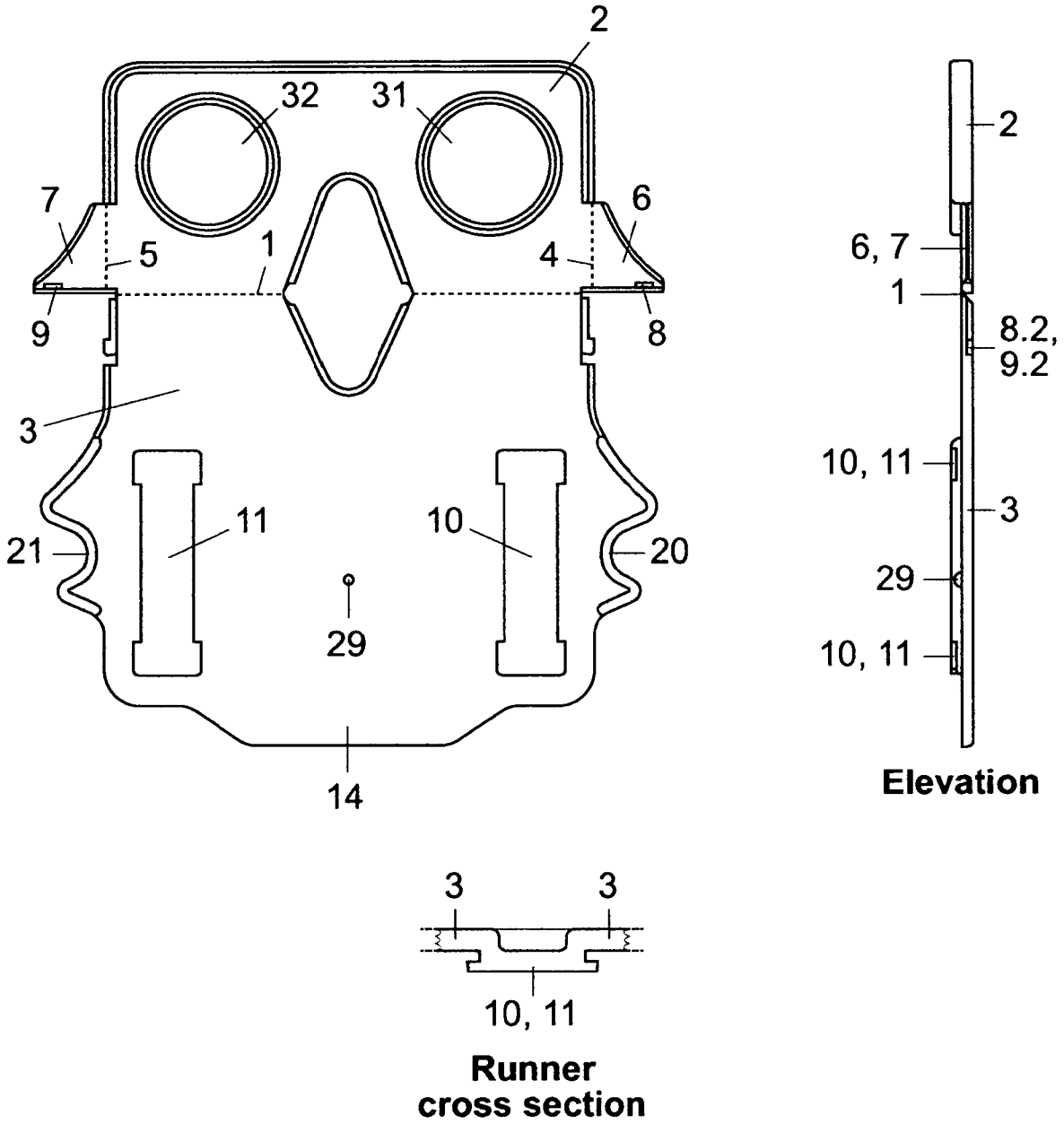


Figure 3 - 'Bottom Section' underside plan

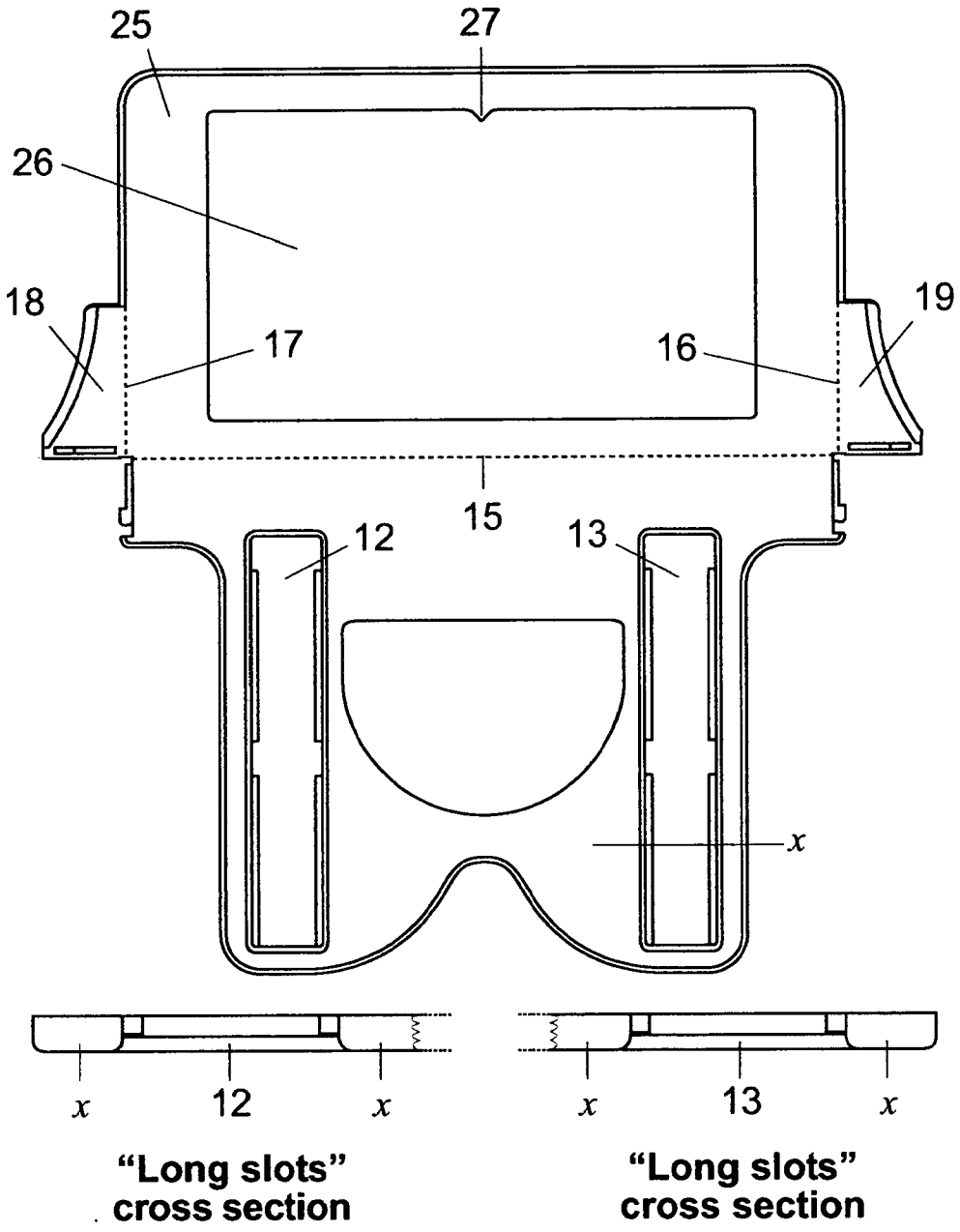


Figure 4 - 'Bottom Section' top side plan

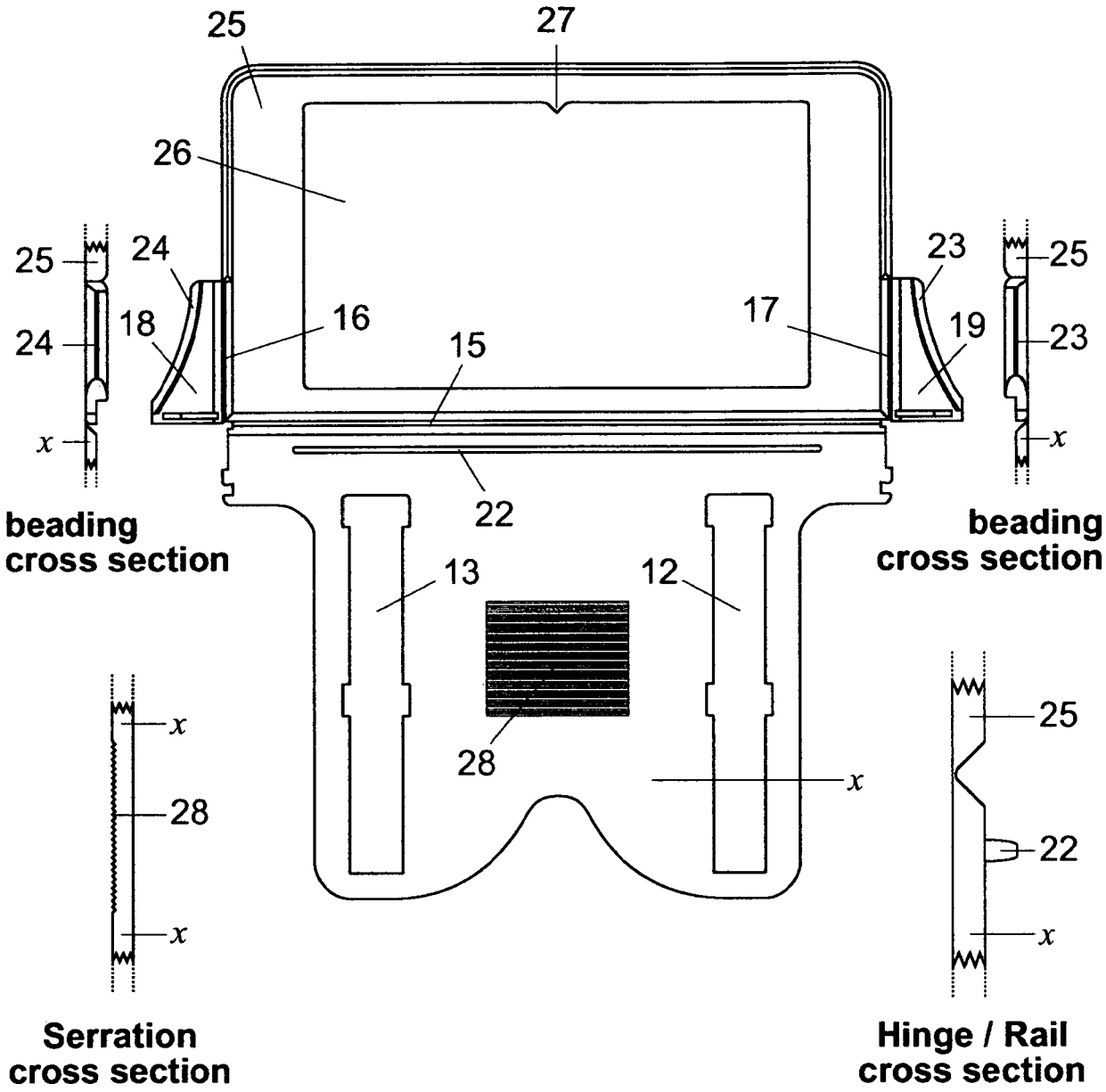
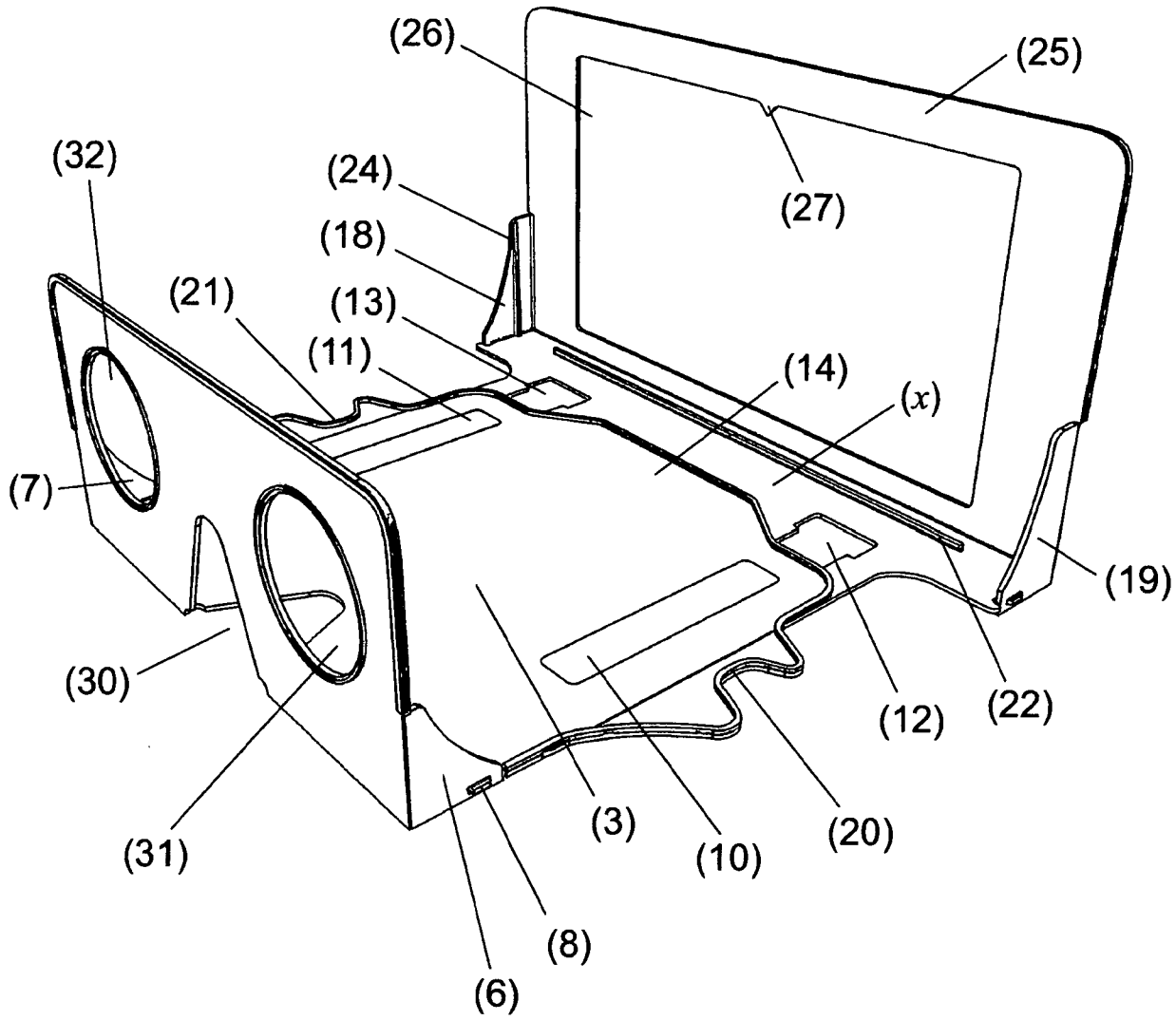


Figure 5 - perspective view in assembled mode



Collapsible Stereoscope

DESCRIPTION

A Stereoscope is a well-known device for viewing stereoscopic (3-D) pairs of images; there have been many different types, especially for viewing stereo cards, over the years. However, it has always been difficult to find a stereoscopic device suitable for viewing stereoscopic illustrations in *books*, which could provide good enough quality for a true three-dimensional experience for all eyesight types, and be easy to use, but also be collapsible into a small enough space to fit inside the book. It is vitally important that the viewer's focussing mechanism is *internal,* so that nothing protrudes forward or backward outside the viewer while it is being focussed.

This high quality instrument solves these problems in a new way, by means of only two specially precision-moulded polypropylene sections which slide into each other. One section rests on the stereo picture in the book, and may also hold any classic stereo card or transparency. The other section carries the lens panel, and focussing is achieved by means of specially designed thumb locators in the base of the lens section. The whole viewer can be

assembled from flat in 15 seconds, locking into a rigid structure, which will stand freely on the page of a book. Importantly, there is no need for the observer to hold the stereoscope when viewing the image. After use, the viewer is easily snapped open and the sections folded apart, a design feature which has not been attempted previously, and using integral flexible hinges in the polypropylene, the instrument collapses down to fit in an envelope only 6mm thick. It is a unique feature of suitable plastics such as Polypropylene to enable these integral, long-lived hinges, produced simply by thinning a small groove down to a fraction of a millimetre in thickness. It also makes for very economical mass production, since the mechanism consists of only two components, both of which can be injection moulded. The unique thin profile of the entire viewer in its collapsed form enables it to be mailed flat in a normal envelope.

Other features include a prismatic effect to aid stereoscopic fusion, especially of larger stereo images, with "wider than eye separation" stereo images, achieved by setting the centres of the lenses further apart than the human eyes; this also gives the effect of a virtual septum, by screening each eye from parts of the image intended for the other eye. Essential is the need for accurate location of the viewer, in this case achieved by lining up an

aperture in the back plate on the stereoscopic book image, avoiding the usual problems of alignment and orientation experienced in using the lorgnette type of viewer which is usually employed in such situations. This stereoscope will achieve the best high magnification viewing of stereoscopic prints available today, equally impressive as a book viewer or a stereoscope for use with any standard format classic stereo card, slide, or daguerreotype.

The hinges in this device have no moving parts; they are simply made flexible by a thinning of the polypropylene in the areas of flexion. Because of this, the viewer can be stowed exceedingly flat, and can be folded and unfolded more than a hundred thousand times without breakage. Because so little actual material is used in the viewer, it will be cheap to manufacture, the most affordable high quality stereoscope available anywhere.

Accordingly, the application provides a stereoscope according to claim 1.

The invention will now be described with reference to the accompanying drawings. Figures 1 and 2 detail construction of the Top Section. This contains one moulded main hinge (1), to allow the lens plate (2) to fold up at 90 degrees to the base plate (3) of this section, and two smaller hinges (4 and 5) to allow the brackets (6 and 7) also to fold at an angle of 90 degrees to the lens plate (2), and locate by means of small slots (8 and 9) into position on the

base plate (3) portion, holding the lens plate (2) at a 90 degree angle. Two runners (10 and 11) are incorporated into the base plate of this section, whose shape can be seen in Figure 2, incorporating wider sections at each end, which provide the means of securing and aligning this section into the slots on the base plate section. **Vitally, these runners and guide slots uniquely maintain perfect registration throughout the viewer's focussing range.**

Figure 3 and Figure 4 detail the bottom plate section, showing the long slots (12 and 13) into which the runners of the lens section fit. The widened sections of the runners in the top section can only enter the slots in one position on the bottom plate, with the two sections slid closest together. At this point the two halves can be snapped together, and slid into the focussing range, the tongue section (14) on the base plate of the lens section snapping into position in contact with the base plate of the bottom section, to prevent the viewer coming apart again at any point in its focusing range. This section also has a main hinge (15) for the back plate to fold up, and two smaller hinges (16 and 17) for the two brackets (18 and 19) to fold up and secure it in position at 90 degrees, as with the other section. On the side of the lens panel can be seen the specially contoured thumb locators (20 and 21), which are the means by which this panel is slid back and forth to focus the

instrument. Around the edges of both panels are lengths of thickening or 'beading' to provide rigidity to the instrument and also comfort in use. The beading around the lenses is a deterrent to scratching and scuffing the lens surfaces. Throughout, the beading is applied only on the 'allowed surfaces', to keep the thickness of the viewer in its collapsed state down to the agreed dimension of 6mm. The major part of both sections is 3mm thick.

Figure 4 shows the retaining bar (22) on the bottom plate, which, along with beading on the brackets (23 and 24) holds a stereo slide in place. In the back plate (25) of the bottom section there is an aperture (26) big enough to fit over the twin images of a stereo view, and it has a locating protrusion (27) in the middle of the top to help alignment on the image. On the top of the lower bottom plate is a ratchet line of grooves (28), which, along with a small rounded protrusion (29) on the mating surface of the other plate, provide control over friction in the sliding mechanism.

Figure 2 shows that there is a comfortable aperture (30) in the lens plate to comfortably accommodate the observer's nose, and the lens apertures (31 and 32) are set so that the centres of the lenses are just a little further apart than the human eyes, in order to produce a prismatic effect. The lenses are held in place by means

of four 'bump over' projections on the insides of the retaining apertures; these can be seen in the lens fit details in Figure1.

Figure 5 shows a perspective view of the stereoscope in fully assembled mode.

CLAIMS

1) A stereoscope comprising:

a front plate, hingeably connected to a first plate, and for receiving a pair of lenses;

a back plate, hingeably connected to a second plate, and for locating the stereoscope next to a stereoscopic image;

wherein the second plate is slidably engageable with the first plate by two parallel sliding runner arrangements to allow the distance between the front plate and the back plate to be varied;

wherein the stereoscope is collapsible to a thickness of no more than 6mm;

wherein each plate is moulded flexible plastic; and

which incorporates contoured thumb locators on the first plate to facilitate movement of the second plate with respect to the first plate.

2) A collapsible stereoscope according to claim 1 further comprising a locator on the second plate for holding stereo prints and transparencies.

3) A collapsible stereoscope as substantially hereinbefore described and with reference to the accompanying drawings.