ments of today are larger than is normally assumed.

The accuracy and reliability of photogrammetric procedures in general can doubtlessly become considerably increased when the systematic errors of the fundamental pencils of rays are determined. The same principles that have been used above can be applied to all kinds of cameras (microscopes, x-ray instruments, amateur cameras etc.) as well as to all kinds of projectors, [3]. In some cases more degrees of freedom can be used for the adjustment. In projectors with mechanical projection for instance, additional sources of errors as the "Breiten and Schiefen" errors (x-inclination and "latitude distortion") or the lacking intersection of axes can be numerically determined.

The practical treatment of single photogrammetric models and aerial triangulation strips with respect to known systematic errors in the reconstruction of the fundamental pencils of rays has, among other questions, been demonstrated in [4].

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A Counter-Weight for the Multiplex Printer

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THE forty-odd pounds of the multiplex printer dome-assembly can seem like a hundred pounds at the end of a busy day. This is especially true when female photographers are using the printer and when several rolls of film have been used during the course of the day. In addition, valuable space must also be used upon which to place the dome-assembly while changing the rolls of film, and great care must be used when replacing the assembly to bring the precision-ground surfaces of the two parts of the printer together. To alleviate operator fatigue and insure correct alignment, a relatively simple and inexpensive device has been designed and is shown in the figure. To the U. S. Navy Hydrographic Office, the nautical approach, i.e. line, pulleys and counterweight, was a natural one.

The printer shown in the figure is centered $12\frac{1}{2}$ inches from the wall upon a platform 18 inches high. The "pail handle" attached to the head is made of 5/16″ cold rolled steel. The bracket is mounted on 2″×4″ wooden crossmembers which, in turn, are fastened to the wall. The lower 2″×4″ member is about eight feet from the floor and the upper one ten feet. The bracket itself is made of $\frac{1}{4}$″×$1\frac{1}{2}$″ strap iron. It extends 12 inches from the wooden crossmembers and has two 10″ crosspieces to support the ball bearing pulleys. The pulleys are hung from universal action swivels.

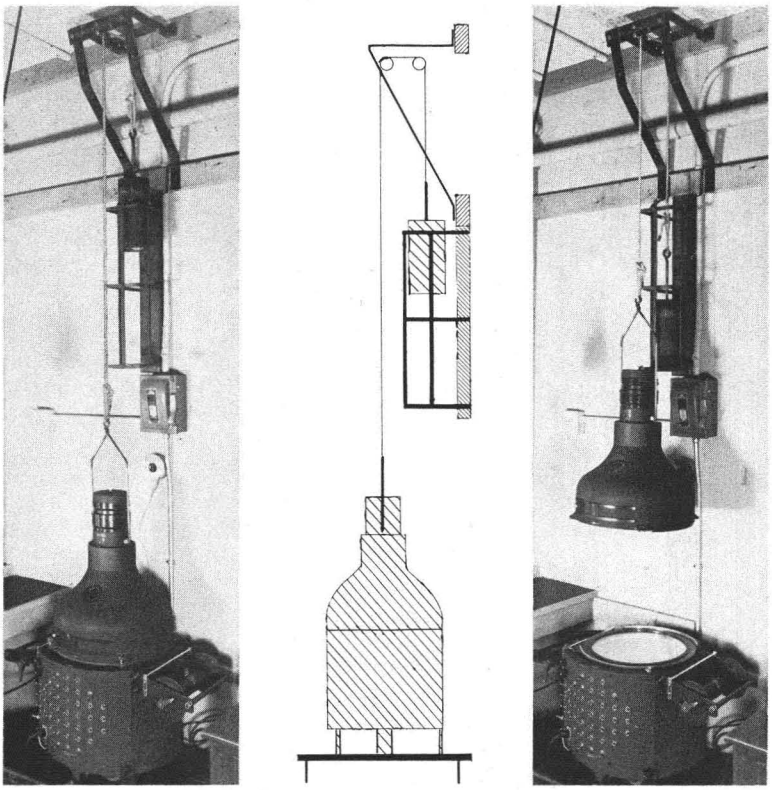

FIG. 1.—Multiplex printer counterweight.

The counterweight guide is six feet from the floor and about two feet high. In addition to being a safety precaution the guide is a stop for the counterweight. The counterweight is made by pouring lead into a ten inch length of four inch cast iron pipe. A half-inch rod with an eye in each end was anchored to the pipe by a pin before pouring the lead. The length of the $\frac{3}{8}$" nylon line was determined by trial and error. It is fastened at each end by a simple bowline knot.

While not a very imposing arrangement it has that most desirable of qualities—it works.

NEWS NOTE

THE 55 GE—NEW CAMERA DEVICE

A camera that will keep an eye on guided missiles in flight and be carried either in a missile or aboard a chase plane, was recently described at the photographic equipment plant of Gordon Enterprises, North Hollywood.

Tagged the 55 GE, the new camera device is only a little larger than a man's hand, and can attain operational rates as high as 200 pictures per second in contrast with conventional movie camera speeds of 24 pictures per second.

The purpose of the equipment is to obtain a perfect photographic record of the flight path and performance of a missile in the air, recording missile instrumentation as well as terrain and sky or horizon, all in the same strip or film. By studying the strips thus produced, engineers can learn the attitude of the missile in flight, and obtain vast amounts of other data on performance.

Correlation timing devices are being installed in some units to provide an accurate time base for precise data on just what incident in flight occurred as just what time during the flight.