

A SELF-CENTERING X-RAY CAMERA FOR POWDER DIAGRAMS

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X-ray powder diagrams are more and more widely used for mineral identification because of the usually unequivocal results and the convenience of the method. Modern x-ray sets can easily be operated by an intelligent technician, and the sealed tubes, now on the market, are long lasting and efficient, reducing the time of exposure to a fraction of what it used to be a couple of decades ago. The most time consuming parts of the procedure are 1.) the centering of the pin, and 2.) the preparation of the pin. We have been able to reduce the time spent on both these operations to a minimum, and it may be worth while to publish our results.

Centering of the pin.

In most commercial cameras the pin is mounted on a holder more or less like a simplified goniometer head, and is centered by two or more screws; it takes normally a quarter of an hour or twenty minutes to get a good centering. For most people it will be a nearly irresistible temptation to try to save time by interrupting the centering before it is perfect, resulting in inferior films and inaccurate readings.

We have been able to avoid this operation altogether using a specimen holder with a hole in it which is centered once for all. When a rod is placed in a closefitting hole which is centered the rod itself must necessarily be centered. It appears from the drawing, Fig. 1.,

how the moving part of the camera is constructed, and a more detailed description should be unnecessary. The diameter of the centered hole is 0.12 millimeter and the pin is 0.10 mm thick.

With some experience it is not difficult to place the pin in the holder and it is only very rarely broken. When that does happen the holder is rejected and replaced by a new one.

Preparation of the pin.

The powder is mounted on a glass fiber of either lithium borate glass or ordinary glass giving identical results. A laboratory glass-rod is heated over a good Meker burner and by a fast movement drawn out to a fiber. Parts of the fiber which are not perfectly straight and measure 0.10 mm in diameter are rejected. In this way some hundred pins are easily made in half an hour. The pin is "wetted" by some adhesive or other, for example an extremely thin film of pure vaselin, and rolled in the powder to be examined. Unnecessary adhering powder is blown off, and the pin thus covered with an even film of powder is ready to be placed in the holder. The whole operation takes but a couple of minutes. A great advantage is that only very little material is needed; a grain just big enough to be seen by the naked eye is ample, and will give a perfect film.

Acknowledgement.

During the building of the camera a number of awkward mechanical problems were encountered, and skilfully solved by Mr. Jahrl Andersen, the mechanic of The Geological Museum, Oslo, whose cooperation and expert workmanship is hereby duly acknowledged.

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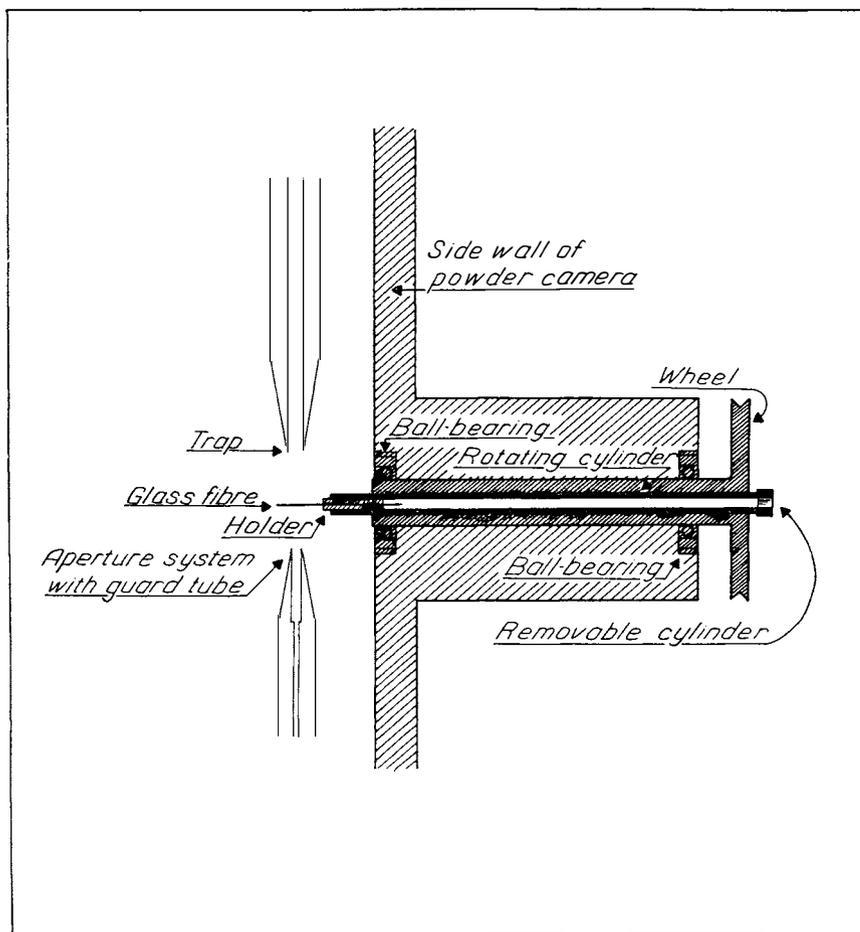


Fig. 1. Moving parts of selfcentering x-ray camera.