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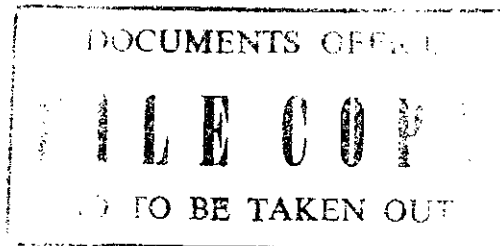
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APPLICATION IN THE U.S.S.R.
ON SCRIBING MAP MANUSCRIPTS ON PLASTICS

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CHIEF ADMINISTRATION OF GEODESY AND CARTOGRAPHY
MINISTRY OF GEOLOGY OF USSR

APPLICATION IN THE U.S.S.R.
OF SCRIBING MAP MANUSCRIPTS ON PLASTICS

MOSCOW 1966

APPLICATION IN THE U.S.S.R.
OF SCRIBING MAP MANUSCRIPTS ON PLASTICS

The method of scribing map manuscripts on lacquer coating applied to transparent base material was offered in this country first in 1939. It was widely put in production however only since the introduction of little-deforming sheet plastics.

At the beginning of the fifties our home chemical industry began to turn out polyvinyl chloride plastic - Vinypros and elaboration of scribe - coatings, scribing instruments and technology conforming to the use of plastics was started.

The originally used asphalt scribe - coating proved to be imperfect.

The beginning of industrial application of scribing method in this country may be assumed to be the second half of the fifties, when a convenient yellow - green scribe - coating first was used. By that time scribing instruments and devices, methods of scribing and technique had been worked out and a number of text - books for preparing maps for issue by scribing method had been published.

As the base material for scribing the polyester plastics are currently used, which have sufficiently low heat - stretch factor (i.e. are stable enough dimensionally), little thickness, great flexibility and big breaking strength; they are stable enough to thermal and light effect.

Scribe-Coating. Scribe-coating used at our laboratories consists of the following components: colloxilin, wood rosin, titanium dioxide, dibutyl phtalate, petrolatum oil, butyl acetate and rectified alcohol. The scribe-coating is prepared directly at enterprise engaged. It may be dyed in any colour, it is sufficiently durable. The scribe-coating has a thickness of about 10 m and serves for 6-10 months.

Scribing instruments and devices. As the graver points gramophone or other needles are generally used as well as specially manufactured hard-steel

cutters. The holders for pencil rods or specially made penholders with upright and inclined fastening of needles are used for handling the points (Fig.1). Thickened curve lines as well as double and triple parallel lines are scribed by the swivel graver (Fig.2) furnished with a set of cutters



Fig.1

and contour pens. The horse shoe-shaped instrument body is supported by two small wheels and a cutter inserted into contour pen which is fastened to the vertical axis. The pressure on the cutter is adjusted by moving some load. For the movement of swivel graver during operation the handles are provided, near which the magnifier is placed.

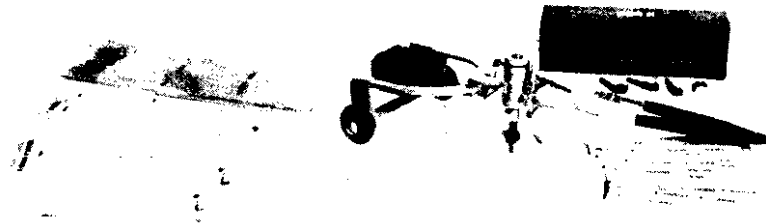


Fig.2

For the scribing of dotted, areal and isolated symbols metal and plastic templets are used.

The single winding lines of different thickness are scribed by the lightened graver (Fig.3) with a cutter that is a kind of contour pen. The pressure on the cutter is adjusted by turning of eccentric load. The hard-facing alloy is soldered upon the ends of the cutters; therefore the cutters do not need frequent sharpening.

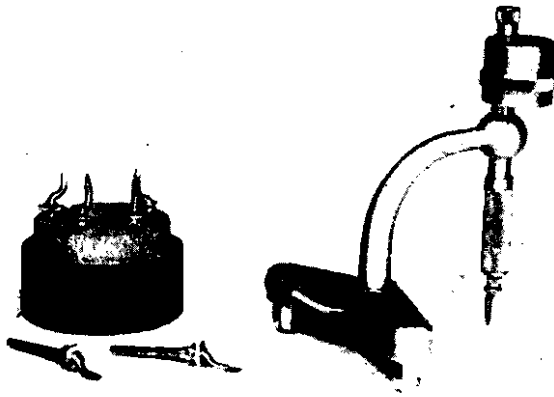


Fig.3

For the scribing of single and double circles with correct placing a bow-pen is used, provided with the extensible leg and centering needle as interchangeable eccentrically sharpened pins and magnifier.

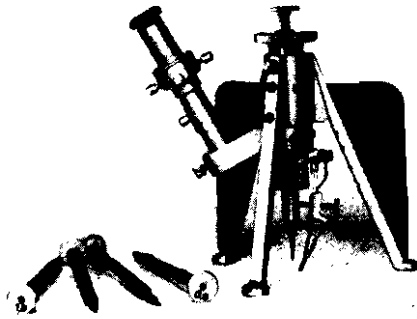


Fig.4

The dots and single circles are scribed by electric dot graver (Fig.5), which consists of a ball-tipped tripod support carrying the spindle with cutter. The spindle gets its rotation from electric motor through the small flexible shaft.

For the scribing of complicated (figured) symbols and figures the horizontal pantograph (Fig.6) is applied, furnished with metal templets, device for lifting the cutter and sighting device. The models of semi-

automatic instrument for scribing the dotted and broken lines as well as the circles are manufactured, which raise the productivity of labour two times.

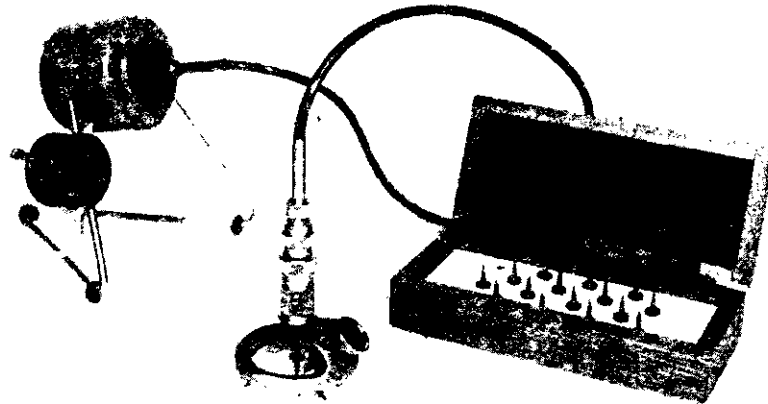


Fig.5

Photocopying processes. Drawing the outline pattern to be scribed on the scribe-coating is made by wash-out method. When it is necessary to copying the features scribed on an other plate onto the outline, the latter is made by the method of dying the image in the very scribe-coating.

Slide copies of the scribed plates are also made by the wash-out method and copying lettering onto the slide copies protected with celluloid film is accomplished by positive copying with dying the image in base material (plastic) itself. The same method is applied for the registered slide copies.

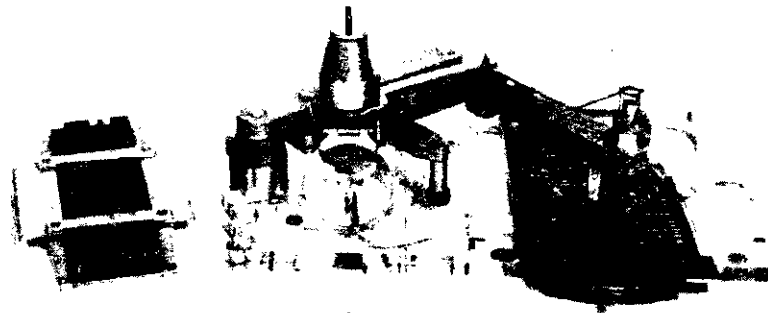


Fig.6

Geographical names are obtained by help of photographic composing on the film or paper with removable layer. Placement of lettering is made on the clean plastic which is superimposed on the hachure plate.

The technology of preparing maps for issue by scribing. Technology applied depend on scale and complication of the map. Largescale topographic maps with not complicated amount of details are scribed on single plates and separate slide copies are obtained for each dye. The more complicated map sheets are scribed on two or three plates. At last, small-scale reference maps having big size and mare complicated pattern are scribed on four or more plates. For more correct registration of map details, printed in different colour the scribing on several plates is made successively with copying details scribed on one plate onto outline pattern of the second one and so on. Lettering printed in different colours is pasted on separate plastic sheets and then are copied on to slide copies of corresponding hachure details.

The correction of work done is accomplished generally on the plates.

As a result of scribing: the separate slide copies by the number of dye in printing, registered slide copy of all the hachure details, which serves as combined outline for preparing printing plate are passed for issue. The development of scribing method and mastering of its application at the cartographic enterprises gave the possibility to compose the map manuscripts on plastics with simultaneous scribing composed pattern for issue. The reduced image of cartographical document is copied on the surface of scribe-coating and composing of map details is done by means of soft crayons. The pencilled drawing is scribed for issue at once. Such technology allows the work on tracing manuscript map to be eliminated; it gives considerable economical effect. With this method the amount of errors on the map and the time spending for discovering and correcting them are reduced.

The work is done in the U.S.S.R. also of composing topographic map sheets on the universal stereoplotters with the application of scribing method permitting to obtain ink manuscripts on above-mentioned instruments.

The great perspectives has the scribing method for the revision of topographic maps.