Sept. 8, 1959 E. H. KOENIG 2,902,760

SCRIBING INSTRUMENT

Filed Sept. 17, 1956

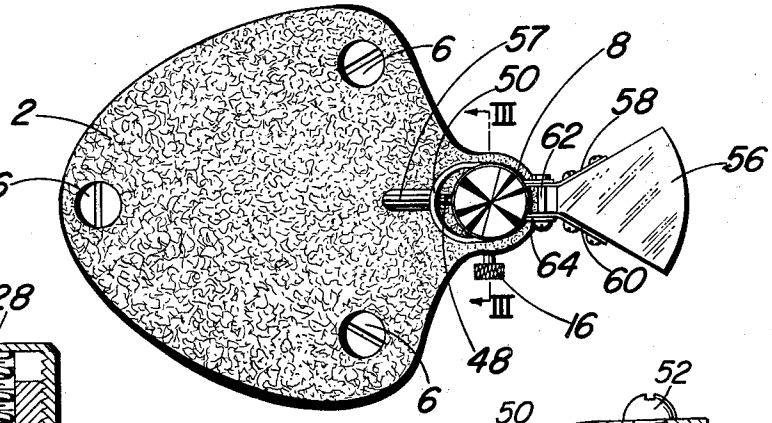


Fig. I

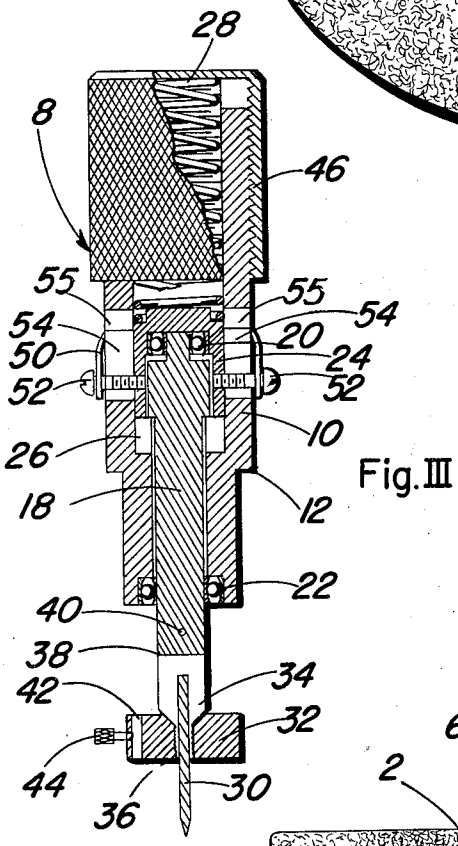


Fig. III

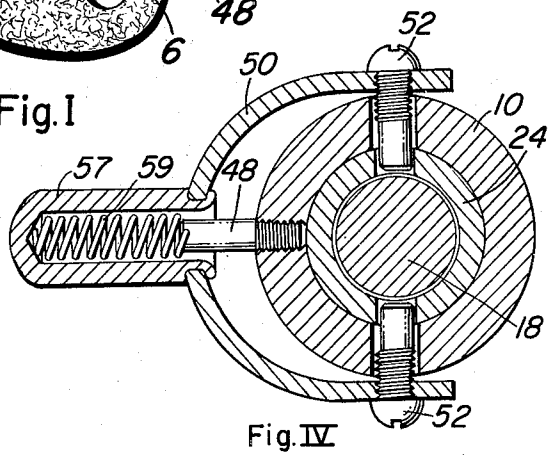


Fig. IV

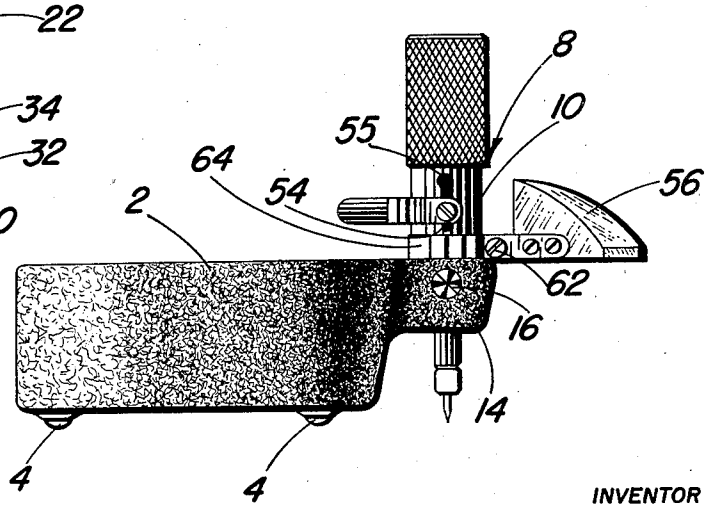


Fig. II

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United States Patent Office 2,902,760 Patented Sept. 8, 1959



2,902,760

# SCRIBING INSTRUMENT

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Application September 17, 1956, Serial No. 610,266

2 Claims. (Cl. 30—164.9)

This invention relates to a scribing instrument of the type used in map making.

In map making, extensive use is made of a scribe material which is made up of a plastic foil coated on one side with an opaque scribable coating. The map is then scribed in the coated surface and a drawing made in this manner can be used directly as a negative for reproduction of the map on photosensitive materials by contact exposure. One type of scribing instrument which has been used for the production of drawings such as maps on these scribe coated materials consists of a heavy body which is provided with three feet for contacting the surface to be scribed. A spindle carrying the scribing tool is secured to this body and the scribing tool is forced downward against the surface to be scribed by means of a compression spring provided within the spindle.

Using a scribing instrument of this type, the scribing tool immediately comes in contact with the material to be scribed when the instrument is placed upon the surface and the tool penetrates the scribe coating. Considerable skill is therefore necessary in order to bring the scribing point down at exactly the right spot on the sheet. Now it has been found that the use of a scriber of this general type can be greatly simplified by providing means to hold the scribing point above the plane determined by the three feet attached to the body of the scriber. This permits the body of the scriber to be placed upon the surface to be scribed without bringing the point of the scribing tool in contact with the scribe coating. The body may then be brought into the desired position on the sheet and the tool lowered at will to bring the scribing tool in contact with the material under the action of the compression spring. The scribing instrument is then moved over the surface to scribe lines in the usual manner and when a line is finished the scribing tool may again be raised off the surface and the instrument moved to a new location without any danger of unintentionally adding a tail to the line as the scriber is lifted from the surface.

The above objects of the invention and the means for their attainment will be more fully understood after reading the following description taken in conjunction with the accompanying drawing in which:

Fig. I is a view in plan of the new scribing instrument.

Fig. II is a view in elevation of the new scribing instrument.

Fig. III is a view in sectional elevation of the spindle of the new scribing instrument taken along the line III—III of Fig. I and looking in the direction of the arrows.

Fig. IV is a view in horizontal section of the spindle of the new scribing instrument taken along a horizontal line passing through the center line of the screws 52 in Fig. III and looking downward.

Referring to the drawings, the body 2 of the scribing instrument is made up of a casting of substantial weight of a material such as brass or the like. It has been found that increasing the weight of the body was desirable in order to assure that the body would not tip during the



scribing operation. The body 2 is provided with three feet 4 which are carried at the lower end of three screws 6 threaded through the casting as shown in Fig. I. Preferably, the feet 4 consist of steel balls inserted into recesses provided in the bottom end of the screws 6 and the balls are held in the screws by spinning some of the metal of the screws over the balls. An anti-friction washer such as a washer made of polytetrafluoroethylene may be provided in each of the recesses in the screws 6 above the balls.

The body 2 is also provided with a vertical cylindrical hole to receive the spindle 8. As shown in Fig. III, the spindle 8 includes a vertical tubular member 10 which is provided with a horizontal shoulder 12 which contacts the upper surface of the body 2. The portion of the vertical tubular member 10 which extends below the shoulder 12 is provided with an outer cylindrical surface which fits the vertical cylindrical hole through the extension 14 of the body 2. A knurled set screw 16 is provided as shown in Figs. I and II to secure the spindle 8 to the body 2.

A shaft 18 is mounted in the bore of the vertical tubular member 10 by means of two ball bearings 20 and 22. The upper ball bearing 20 is mounted in a cap 24. The cap 24 is free to slide in the vertical direction within the upper enlarged bore 26 of the vertical tubular member 10. A compression spring 28 urges the cap 24 and thereby also the shaft 18 downwardly. Thus a tool 30 carried in the tool holder 32 will be forced against the surface of a scribe material by the pressure of the compression spring 28. The lower end of the shaft 18 is provided with a conical taper 34 terminating in a threaded cylindrical portion of reduced diameter 36. The lower end of the shaft 18 is also split from the line 38 in Fig. III downward. The threaded portion 36 fits a matching thread in the tool holder 32. The tool holder 32 is also provided with a conical surface which engages the conical portion 34 of the shaft when the tool holder 32 is tightened on the shaft by means of the threads. The engagement of the conical surfaces compresses the split end of the shaft 18 so that it will grasp the tool 30 and hold it firmly. A pin hole 40 is provided in the shaft 18 for use in holding the shaft when the tool holder 32 is tightened thereon. An additional hole 42 is provided in the tool holder 32 which may alternatively be used to carry the tool 30. When the tool 30 is carried in the hole 42 it is secured therein by tightening the knurled set screw 44. In some scribing work it is preferable to use the tool in the hole 42 which is displaced from the center of the shaft 18 so that the tool follows curves smoothly as the scriber is moved over the material to be scribed; the shaft 18 being free to turn within the bearings 20 and 22.

The outer race of the bearing 22 is fixed in the vertical tubular member 10. However, the shaft 18 is free to slide within the inner race of the bearing 20 in order that the shaft 18 will be responsive to the action of the compression spring 28. The upper end of the compression spring 28 is confined by the cap 46 which is threaded on the vertical tubular member 10. The outside surface of the cap 46 is knurled for ease in turning the cap in order to adjust the pressure applied to the tool by means of the compression spring 28.

A pin 48 shown in Fig. I and in Fig. IV extends horizontally from the vertical tubular member 10 and acts as a pivot means for the yoke 50 which extends a little more than half way around the tubular member 10. As shown in Fig. III and in Fig. IV, the screws 52 are threaded through both ends of the yoke 50, extend through slots 54 in the vertical tubular member and engage slots in the cap 24. The yoke 50 is provided with a handle 57 by means of which the yoke may be pivoted about the pin 48 to raise the screws 52 and thereby lift

the tool **30** off of the surface to be scribed against the action of the compression spring **28**. The upper ends of the slots **54** are notched and a compression spring **59** is provided within the handle **57** acting between the yoke **50** and the pin **48** to hold the screws **52** in a locked position in the notches **55** when it is desired to keep the tool off the surface to be scribed. When it is desired to release the tool, a slight pressure on the handle **57** will release the screws **52** from the notches **55** and permit the tool to move downwardly under the action of the compression spring **28**.

A magnifier **56** in the form of a sector of a lens is attached to the vertical tubular member **10** in order to permit close viewing of the tool **30**. The magnifier **56** is attached by means of two metal strips **58** and **60** (see Fig. I) which are screwed against the radial surfaces of the lens **56** as shown and then bent parallel to each other. The metal strips **58** and **60** are provided with holes to receive the screw **62**. Another metal strip **64** is bent around the vertical tubular member **10** and is also provided with holes to receive the screw **62**. The magnifier **56** may be tilted about the screw **62** as an axis for the best viewing of the tool **30**. At the same time, the magnifier may be pivoted around the vertical tubular shaft **10** for the same purpose. By tightening the nut provided on the screw **62** sufficiently enough friction can be produced between the metal strips **58** and **60** and the metal strip **64** and between the metal strip **64** and the vertical tubular member **10** so that the magnifier **56** will hold its adjusted position.

Having thus described the invention what is claimed is:

1. A scriber comprising a heavy body provided with three feet for engaging a surface to be scribed, a vertical cylindrical member carried by said body, a member sliding within said vertical cylindrical member and carrying a scribing tool at its lower end and a compression spring mounted within said vertical cylindrical member and urging the member carrying the scribing tool downward against the surface to be scribed, a pivot secured to said vertical cylindrical member, a lever pivoted on said pivot and engaging the member carrying the scribing tool through an opening in said vertical cylindrical member, whereby the member carrying the scribing tool may be urged upwardly by said lever to compress said spring and relieve the pressure on the scribing tool so that the scriber may be moved from one position on the surface to be scribed to another without scribing the surface and without the necessity of lifting the scriber body.

2. A scriber comprising a heavy body provided with three feet for engaging a surface to be scribed, a vertical cylindrical member carried by said body, a member sliding within said vertical cylindrical member and carrying a scribing tool at its lower end and a compression spring mounted within said vertical cylindrical member and urging the member carrying the scribing tool downward against the surface to be scribed, a pin extending horizontally from said vertical cylindrical member, a lever having a hollow handle portion engaging said horizontal pin to pivot said lever on said vertical cylindrical member and a yoke portion partially extending around said vertical cylindrical member, means extending inward from said yoke portion of said lever through slots in said vertical cylindrical member and engaging the member carrying the scribing tool, whereby the member carrying the scribing tool may be urged upwardly by said lever to compress said spring and relieve the pressure on the scribing tool, said slots in said vertical cylindrical member terminating in notches which engage the means extending inward from said yoke portion of said lever to engage the member carrying the scribing tool to hold said spring in compressed position keeping said scribing tool off the surface to be scribed so that the scriber may be moved from one position on the surface to be scribed to another without scribing the surface and without the necessity of lifting the scriber body.

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