

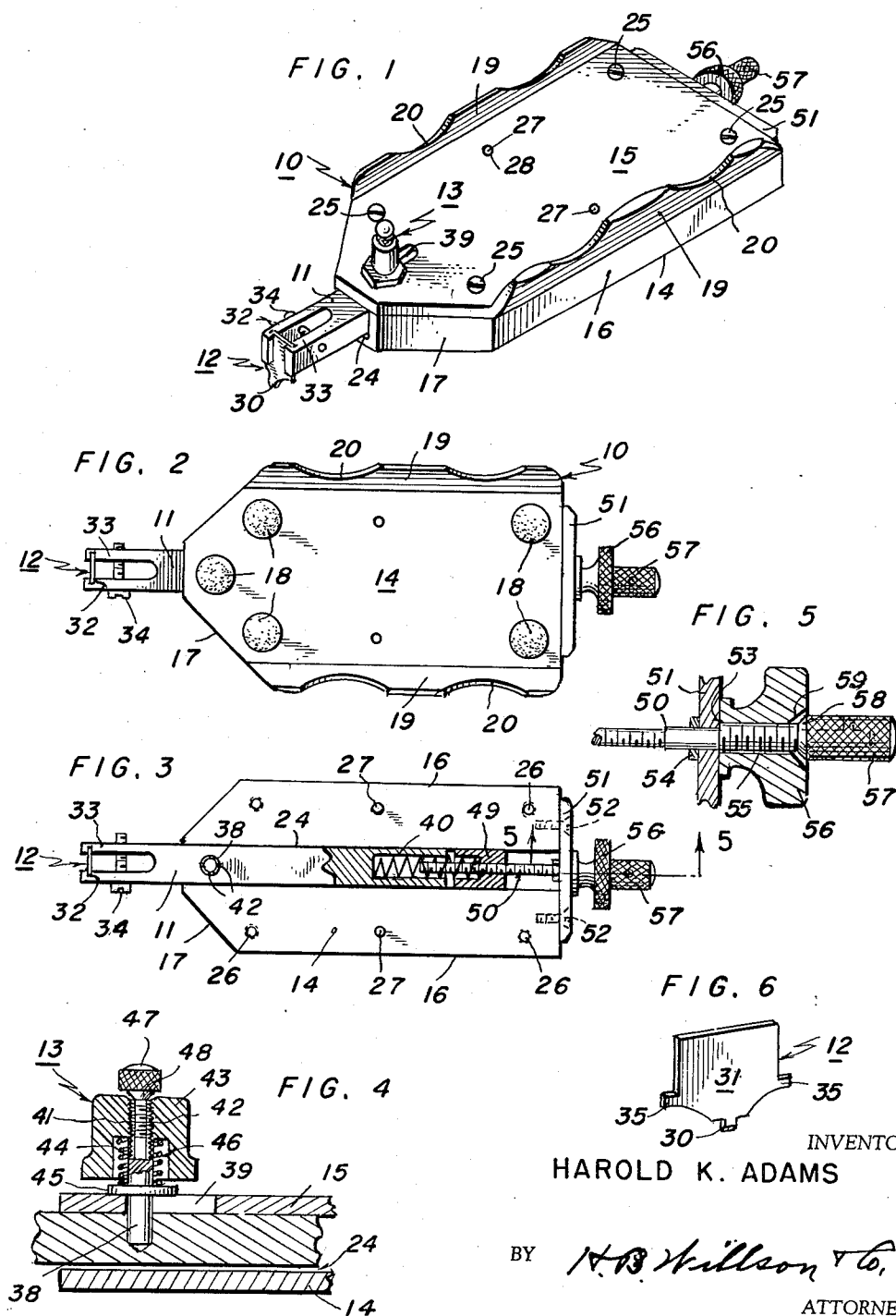
April 25, 1961

H. K. ADAMS

2,981,002

SCRIBING OR ENGRAVING INSTRUMENT FOR MAP MAKING

Filed July 27, 1959



1

2,981,002

SCRIBING OR ENGRAVING INSTRUMENT FOR MAP MAKING

Harold K. Adams, Riverdale, Md. (% Universal Instrument Co., 3809 Bunker Hill Road, Brentwood, Md.)

Filed July 27, 1959, Ser. No. 829,664

6 Claims. (Cl. 33—32)

The invention relates to engraving hand tools or instruments used especially in map making. Such scribes or gravers cut through the coating on a sheet usually of vinyl plastic in making various lines, symbols and other map features. More particularly the invention relates to such tools known as building gravers since they are intended to cut the coating to represent the location of houses or buildings on the map, although the improved tool may also be used in connection with a straight edge for straight line graving.

One object of the invention is to provide a more simple and less expensive engraving tool of this character having an elongated body and a scratching blade, carrying member projecting forwardly therefrom and mounted for both a limited longitudinal sliding movement and a limited vertical movement, the body being slid by the hand over the surface of a map sheet to easily and accurately position the blade over the building symbol, and the blade carrying member being actuated in both of its movements by a finger piece mounted on the body and moved by a finger of the hand grasping the body.

Another object of the invention is to provide a tool of the above character with effective means for varying the depth of the cut or scratch made by the blade according to the thickness of the coating on the map sheet.

With the above and other objects and advantages in view, the invention resides in the novel combinations and arrangements of parts and the novel features of construction hereinafter described and claimed, and illustrated in the accompanying drawings which show the present preferred embodiment of the invention.

In the drawings:

Fig. 1 is a perspective view of the improved building graver;

Fig. 2 is a bottom plan view;

Fig. 3 is a view similar to Fig. 2 with the top plate or cover of the body and parts of the finger piece removed;

Fig. 4 is a detail vertical longitudinal section, on an enlarged scale, showing the mounting and adjustment of the finger piece;

Fig. 5 is an enlarged detail section on the line 5—5 in Fig. 3;

Fig. 6 is a perspective view of one of the scratching blades used on the tool.

Referring more in detail to the drawings the numeral 10 denotes the body of the instrument, 11 a tool or blade carrying member which projects out of one end of the body and is mounted for limited vertical movement and limited longitudinal sliding movement, 12 a scratching or scribing blade mounted on the outer end of the slidable member 11, and 13 a finger piece disposed on the body 10 and movable to impart to the slide 11 its two movements. The body is preferably of rectangular shape and of a size to be grasped between the thumb and fingers of a hand of the user when it rests on a map sheet. The body comprises a main or base section 14 and a removable top or cover section 15. The base section may be made of a flat rectangular plate, preferably metal, and has parallel

2

side walls 16, the front corners of which are cut away to give the body a pointed front end 17. The bottom of the base section is flat and smooth, and in order to prevent unintentional sliding of the body on the map sheet, a plurality of spaced plugs of cork or other anti-slip material 18 are set in sockets formed in the bottom face of the body plate.

The top section 15 is also a flat plate, preferably of metal, which covers the entire top face of the base section and is formed along its sides with upwardly and outwardly extending longitudinal wings or flanges 19 the upper edges of which are scalloped as at 20. These flanges permit the body 10 to be effectively and securely grasped by the hand of the user. The top closes a centrally disposed straight longitudinal channel 24 formed in the top face of the base 14, and may be removably fastened to the latter by a plurality of machine screws 25 disposed in opening in the top plate and threaded into sockets 26 in the bottom of body plate. It will be noted that the guide channel is of rectangular shape in cross section having parallel vertical side walls rising from a flat bottom. In order to accurately position the parts 14, 15 when the instrument is assembled, two positioning studs 27 are fixed in the base or bottom section and fit in holes 28 formed in the cover plate.

The blade carrying slide or member 11 is in the form of an arm which has free longitudinal sliding movement in the forward portion of the channel 24 and a limited vertical swinging or sliding movement between the bottom of that channel and the cover plate 15. This slide member 11 may be a straight piece of metal of square or rectangular shape in cross section, and of a length to dispose the blade 12 in forwardly spaced relation to the tapered front end of the body 10. The channel 24 in the base section 14 is cut entirely through the latter and opens at its front end through the reduced or tapered end 17. The width of this guiding channel 24 is such that the slide or member 11 has free lengthwise sliding movement between its side walls but no transverse or lateral movement. The depth of the channel is greater than the vertical thickness of the arm or member 11, as will be seen on reference to Fig. 4, but the vertical movement of the latter need not be much greater than the greatest thickness of coating on the plastic map sheet.

Various kinds of engraving tools or blades may be used on the arm 11, and mounted in various ways. When the instrument is to be used as a building graver, I preferably use the scratching blade shown. It has a point or end 30 with a flat chisel-shaped extremity, as seen in Fig. 6. This point is formed on a central projection on the bottom end of a flat rectangular plate 31 of suitable metal mounted transversely at the projecting outer or forward end of the arm or slide 11. As shown, the parallel side edges of the plate 31 are inserted in laterally opposed vertical grooves 32 formed in two spring arms 33 at said end of the slide or member 11. These resilient clamping arms 33 may be drawn toward each other by a screw 34 to clamp the blade 12. To correctly position the blade in the clamping arms, the blade may be formed with laterally extending stop projections 35 to abut the bottom edges of the arms 33. In map making houses or buildings are represented by square or rectangular shaped areas of different sizes, and the beveled or chisel-shaped scratching end 30 must be shaped according to the width of the square dots or rectangular scratches desired. Blades having scratching ends 30 of different width are interchangeably used on the instrument but the length of the scratch that is to be made is determined by the longitudinal sliding movement of the member 11, as presently explained.

The finger piece 13 is fixed to an intermediate por-

tion of the slide or member 11 and it is disposed at the front portion of the body 10 so that when it is operated by a finger of the hand grasping the instrument there will be an unobstructed view of the blade and hence the latter may be easily and accurately positioned over the map symbol. The finger piece is used not only to impart movement to the slide but also as part of spring means for normally holding the slide elevated in the guide 24 with the scraping point 30 of the blade above the surface of the coating on the map sheet when the instrument is on the latter. As shown in Fig. 4, the finger piece comprises an upright rod or post 38 which has its lower end fixed in the slide 11 and which is movable in a short longitudinally extending slot 39 formed in the top plate 15 adjacent its front end. The engagement of the post with the forward end of the slot limits the outward movement of the slide 11 under the action of a coil spring 40, as later explained. The projecting upper end of the post is formed with a bore or socket 41 and is also formed with two downwardly extending diametrical slits in planes at right angles to each other to provide four clamping jaws 42, as seen in Fig. 3. That upper portion is externally screw threaded to receive a nut 43 or finger piece proper which serves both as an adjustable stop to limit the downward movement of the post and slide and as a housing for a coil spring 44 which surrounds the post and is disposed between the nut and the top plate 15. A washer 45 on the post may be disposed between the nut and top plate, and the spring 44, which is disposed in a socket 46 in the bottom of the nut, rests on the washer. It will be seen that by adjusting the nut on the post, the extent of downward movement of the finger piece and hence the slide 11, may be varied to change the depth of the cut or scratch made by the blade point 30. In order to lock the nut in its adjusted position the upper portion of the socket 41 is internally screw threaded to receive a locking screw 47 which has a cone-shaped portion 48 adapted to engage corresponding shaped portions of the upper ends of the four jaws 42 to spread the same and frictionally lock the nut. The latter may have a milled outer surface or be formed with flat faced portion to be engaged by a wrench or tool.

The rearward or inward movement of the blade carrying slide 11 may be limited by any suitable means to control the length of the scratch made by the point 30. As shown a rectangular stop block 49 is slidable in the channel 24 beyond the rear end of the slide 11 and it is adjustable relative to the slide by an adjusting screw rod 50. To permit engagement of the slide and stop block, the spring 40 surrounds the inner portion of the screw rod 50 and has its ends in sockets formed in abutting ends of those parts. The rod or screw 50 is swiveled in a cross plate 51 fastened by screws 52 to the flat rear end of the body plate 14, as seen in Fig. 3. That may be accomplished and the screw rod may be locked in its adjusted position by the structure shown in Fig. 5. A cylindrical portion of the rod 50 is rotatable in an opening in the plate 51 and its outer portion is enlarged to provide a shoulder 53 held against the plate by a fixed collar or the like 54. The enlarged portion is externally screw threaded at 55 to receive a lock nut 56 adapted to be screwed against the plate 51 to lock the screw rod. The nut 56 may be retained on the rod by an enlarged head 57 suitably fixed on the end of the rod. As shown the nut and head have coacting cone-shaped portions 58 and 59 which frictionally lock these portions when the nut is screwed away from the plate 51, and hence the nut may be used as a finger piece for the screw rod.

The use of the instrument should be apparent from the foregoing description. With the device resting on a coated map sheet, the user grasps the flanges 19 and flat side walls 16 between the thumb and fingers and slides it until the scratching point 30 is over the building symbol. Then with his index finger he first depresses the fingerpiece to cause the point to enter the coating and he then moves

the fingerpiece rearwardly to cause the scratch to be made. The depth of the cut or scratch is regulated by adjusting the nut 43 and the length of the scratch is regulated by adjusting the stop block 49 by means of the screw 50. While the instrument is especially useful as a building graver, it may be used for doing straight line work, such as making a border line for the map, by moving one of the sides 16 along a straight edge such as a rule, T square or the like.

From the foregoing, taken in connection with the accompanying drawing, it will be seen that novel and advantageous provision has been made for carrying out the objects of the invention, and while preferences have been disclosed, attention is invited to the possibility of making variations within the scope of the invention as claimed.

I claim:

1. An engraving hand tool or instrument of the character set forth comprising an elongated body having a substantially flat bottom to slide on a coated map sheet and being of a size to be held between the fingers of the user's hand, said body having in its top a longitudinal guide channel which opens through the front end of the body and has parallel vertical side walls rising from a flat bottom, a removable cover plate on said body closing the top of said channel and formed with a longitudinal slot disposed above said channel and spaced from the front end of the cover plate, an elongated slide of rectangular shape in cross section disposed in said channel and having its front end projecting outwardly from the body and provided with means for mounting an engraving tool, said slide being of less vertical thickness than the height of said side walls of the channel, whereby the slide is mounted for free longitudinal sliding movement and for limited vertical movement between said cover plate and the bottom of said channel, an upright fingerpiece fixed to a portion of said slide within said channel and movable in said slot in the cover plate, a slidable stop member longitudinally adjustable in the rear portion of said channel and engageable by said slide to limit the rearward movement of the slide, spring means interposed between said slide and said stop member to urge said slide outwardly and normally hold said finger-piece at the closed front end of said slot in the cover plate, and other spring means normally holding said slide in an elevated position.

2. The instrument of claim 1 in which said finger-piece comprises a rod having its lower end fixed to said slide and its upper end projecting above said cover plate and screw threaded, and an adjustable nut on said screw threaded end and normally spaced from said cover plate, and in which said other spring means, which normally holds said slide elevated, is a coil spring surrounding said rod between said nut and the top of said cover plate.

3. The instrument of claim 2 in which the threaded upper end of said rod is formed with an internally screw threaded socket and is radially slit to form spring jaws, together with a locking screw in said socket and having a cone-shaped portion to spread said jaws and lock the nut in an adjusted position on said rod.

4. The instrument of claim 1 in which said body is of flat rectangular shape and has flat parallel side walls, and said cover plate is a flat rectangular plate covering substantially the entire top of said body and has along its side edges upwardly and outwardly projecting longitudinal flanges to be gripped by the fingers of the hand, the flat bottom of said body having anti-slip means to engage the surface of a coated map sheet.

5. The instrument of claim 1 in which said guide channel also opens through the rear end of said body, and in which said longitudinally adjustable stop member comprises a stop block slidable in the rear portion of said channel, said block and the rear end of said slide having opposed sockets to receive the ends of a coil spring which constitutes the first mentioned spring means, a transverse plate at the rear end of said body and closing the rear end of said channel, a rotary block-adjusting rod swiveled

5

between its ends in said transverse plate and having both of its ends screw threaded, the threaded inner portion of said adjusting rod having a screw threaded engagement with said block, and a lock nut on the threaded outer portion of said adjusting rod to be screwed against said end plate.

6. An engraving hand tool or instrument of the character set forth comprising an elongated body having a substantially flat bottom to slide on a coated map sheet and being of a size to be held between the fingers of the user's hand, said body being of generally rectangular shape and having a central longitudinally extending guide channel which opens through the front end of the body, and the top of said body having a longitudinally extending slot which opens into the front portion of said channel, a slide in said channel and having its front end projecting outwardly from the body and provided with means for mounting an engraving tool, said slide having free

6

longitudinal sliding movement and also limited vertical movement in said channel, a finger-piece for actuating said slide both longitudinally and vertically, said finger-piece comprising an upright rod movable in said slot and having its lower end fixed to a portion of said slide within said channel and its projecting upper end screw threaded, an adjusting nut on the threaded end of said rod and a coil spring on said rod between said nut and the top of said body, spring means within the body urging said slide outwardly and normally holding said rod at the closed front end of said slot, and means disposed within said channel for limiting the rearward sliding movement of said slide.

References Cited in the file of this patent

UNITED STATES PATENTS

2,438,813 Lundeen ----- Mar. 30, 1948