F. M. DI MARIA

2,513,404
CROSSHATCHING DEVICE
Filed Oct. 31, 1947


FIG_ $F_{-}$


INVENTOR:

WITNESSES
 ar Caul romes

ATTORNEYS.

# UNITED STATES PATENT OFFICE 

2,513,404
CROSSHATCHING DEVICE
Fernando M. Di Maria, Philadelphia, Pa.
Application October 31, 1947, Serial No. 783,329

## 1

This invention has general reference to draftsman's triangles or the like while it relates, more particularly, to the species or form thereof designed to enable the lining or cross-hatching of sectional parts or areas with parallel equally spaced lines.

Heretofore attempts have been made to provide devices capable of drawing section indicating lines in parallel without reliance upon the human eye, or the use of a pair of spacing dividers, with varying success but the degree of accuracy and neatness has been uncertain; while the use of such devices has been limited mainly due to the time-consumed in adjusting such device and their lack of facile manipulation

It is, accordingly, a primary object of my invention to overcome the noted disadvantages by providing a sectional-lining device or draftingtriangle which can be easily adjusted and set for the desired line spacing; and which is capable of use with the same ease as an ordinary triangle for cross-hatching and positive assurance that all of the lines drawn will be equally spaced and the face of the drawing unmarred

Another object of my invention is to provide a sectional-lining drafting-triangle including means, preferably adjustable relative to the hypotenuse side or edge of such triangle, with assurance that the cross-hatching will be drawn in uniform parallelism.

A further object of my invention is to provide a sectional-lining drafting-triangle which greatly facilitates the section lining operation, and that is simple to construct; cheap to manufacture; and which will slide smoothly over the surface of the drawing area to be cross-hatched, wholly or in part.

A still further object of my invention is to provide a sectional-lining drafting-triangle in which the hypotenuse serves as the ruling edge and by the use of which each line drawn serves as a guide for progressively drawing the requisite plurality of equally spaced parallel lines to cover the sectional area.

With the foregoing objects and ancillary advantages in view my invention essentially consists in the features of construction, combinations of elements and arrangements of parts hereinafter described and illustrated by the accompanying sheet of illustrative drawings; wherein:

Fig. 1 is a plan view of a draftsman's triangle typically including the improvements of this invention.

Fig. 2 is a side or edge view of Fig. 1 viewed
looking from the right towards the left-hand thereof.
Fig. 3 is a perspective view of a movable slide which when set at the required adjustment positively ensures all section lines drawn being in equally spaced parallelism.
Fig. 4 is a larger scale section taken as indicated by the arrows IV -IV in Fig. 1; and,
Fig. 5 is an underside plan view of Fig. 4
In describing the form of my invention exemplified in the sheet of drawings herewith, specific terms will be employed for the sake of clarity, but it is to be understood the scope of said invention is not thereby limited; each such term being intended to embrace all equivalents which perform the same function for an analogeous purpose.
Referring more in detail to the drawings the reference character 6 designates, for example only, a conventional forty-five degree draftsman's triangle and 7 indicates the hypotenuse or ruling edge thereof. The triangle 6 is preferably made of suitable transparent material and it is provided with an appropriate scale 8 medially located at right-angles to the hypotenuse 1, for a purpose hereinafter set forth.

Conveniently, although not essentially, in line with the forty-five degree angular ends of the centrally located opening 9 through the triangle 6 I drill spaced holes 10, Figs. 4 and 5, for the reception of shouldered retainer-studs 11 each having a comparatively thin polygonal or rectangular head 12 for snug seating in a correspondingly shaped recess 13, provided for the purpose in the underside of the triangle 6, and whereby said retainer-studs are held stationary, in an obvious manner. The relatively reduced shank 14 of each clamp-stud beyond the shouldered part 11 is screw-threaded for engagement by an appropriate circumferentially knurled clamp-nut 15 and an associated lock-collar 16 . The lockcollars 16 afford guidance for a rectangular linespacing element or strip 17 provided with parallel inclined slots 18 slidably engaging the lock-collars 16. The slots 18 are inclined at a definite angle for maintenance at all times of the outer edge 19 of the strip 17 parallel with the hypotenuse 7 of the triangle. The slots 18 are inclined preferably at an angle of thirty-degrees with respect to the longitudinal edges of the strip 17, and said strip is clamped down by aid of the nuts 15 when set at the requisite adjustment, or desirable spacing, for the section lining to be made. Incidentally it will be readily seen from an examination of Fig. 4 that the lock-collars 16 are

4
While I have shown and described my invention with particularity it is obvious that minor variations will suggest themselves in adapting said invention to different types of draftsman's tri15 of relatively larger diameter than the lockcollars 16 the strip or line spacing element 17 is correspondingly clamped down onto the triangle 6. In other words, when the element 17 is "set" at the required adjustment, determined by the scale 8, it is firmly secured against displacement relative to the triangle hypotenuse or ruling edge 7.

From the foregoing it will now be clearly apparent that the user of the triangle 6 when crosshatching is to be done, simply releases the clampnuts 15 and moves the strip over the scale 8 to the desired spacing extent, intermediate one sixteenth of an inch up to one inch in the showing of said scale, and then tightens up the nuts 15. The user of the triangle now draws an initial line along the hypotenuse edge 7, whereupon said triangle is simply moved along the T-square blade, or a straight edge, until the previously drawn line coincides with the longitudinal outer or guide edge 19 of the strip 17 and draws the next line. This operation is consecutively repeated until the area to be cross-hatched is completed. This simple operation or manner of using my improved sectional-lining device not only greatly speeds up cross-hatching but is a time and labor saving instrumentality; while it is to be noted that the triangle 6 when "set" can be handled with the same case and facility as an ordinary triangle without the aid of any additional instrument or line spacing marker. Also, by the obviously simple set-up of my improved triangle 6 the parts 11,15 and 11 can be readily removed and the said triangle used as ordinarily, and vice versa. It will, also, be appreciated by those acquainted with the art that my improvements are equally applicable to the hypotenuse side of a sixty-thirty degree draftman's triangle by the simple expedient of changing the angular inclination of the slots 18 in the spacing strip 17, so that the ruling edges 7 and 19 would be maintained in parallel. In other words the angular inclination of the slots 18 is definitely related to the angular inclination of the triangle hypotenuse 7, or approximately $30^{\circ}$ with respect to the longitudinal edges of the strip 17 for a forty-degree triangle and correspondingly so for a sixty-thirty degree triangle.

967,431
1,313,168
2,006,285
$2,168,694$
4.)

Number
22,663
842,139 ment. as fall within the scope of the following claim.

Having thus described my invention, I claim:
A draftman's cross-hatching triangle having a linear scale medially located at right angles relative to the hypotenuse edge of the triangle; a line spacing strip on the triangle movable over said linear scale towards and away from the hypotenuse edge of the triangle; parallel slots in the spacing strip inclined at a definite angle relative to the horizontal and effective to maintain the outer edge of said spacing strip always parallel to the hypotenuse edge of the triangle; clamping elements, each in the form of a shouldered stud having a comparatively thin noncircular head at one end for seating in a complemental shaped hole in the triangle to hold said stud stationary, each said stud also including a relatively reduced screw-threaded shank for respective passage through the inclined slots in the line spacing strip; a lock collar of larger diameter than the shouldered part of the stud shank engaged in the associated inclined slot of the line spacing strip to afford movable guidance for said strip; and a nut on the threaded portion of the shouldered shank of the stud to secure the spacing strip at the required adjust-

FERNANDO M. DI MARIA.
REFERENCES CITED
The following references are of record in the file of this patent:

UNITED STATES PATENTS

80

Name
Porter
Date Aug. 16, 1910
Di Maio Aug. 12, 1919
Von Zimmerman _-_ June 25, 1935
Zachs Aug. 8, 1939
FOREIGN PATENTS

| Country | Date |
| :--- | ---: |
| Sweden | June 12, 1906 |
| France _-nn. |  |

