

Aug. 26, 1947.

R. V. WOOD

2,426,480

PUNCH ALIGNING LENS

Filed Jan. 12, 1946

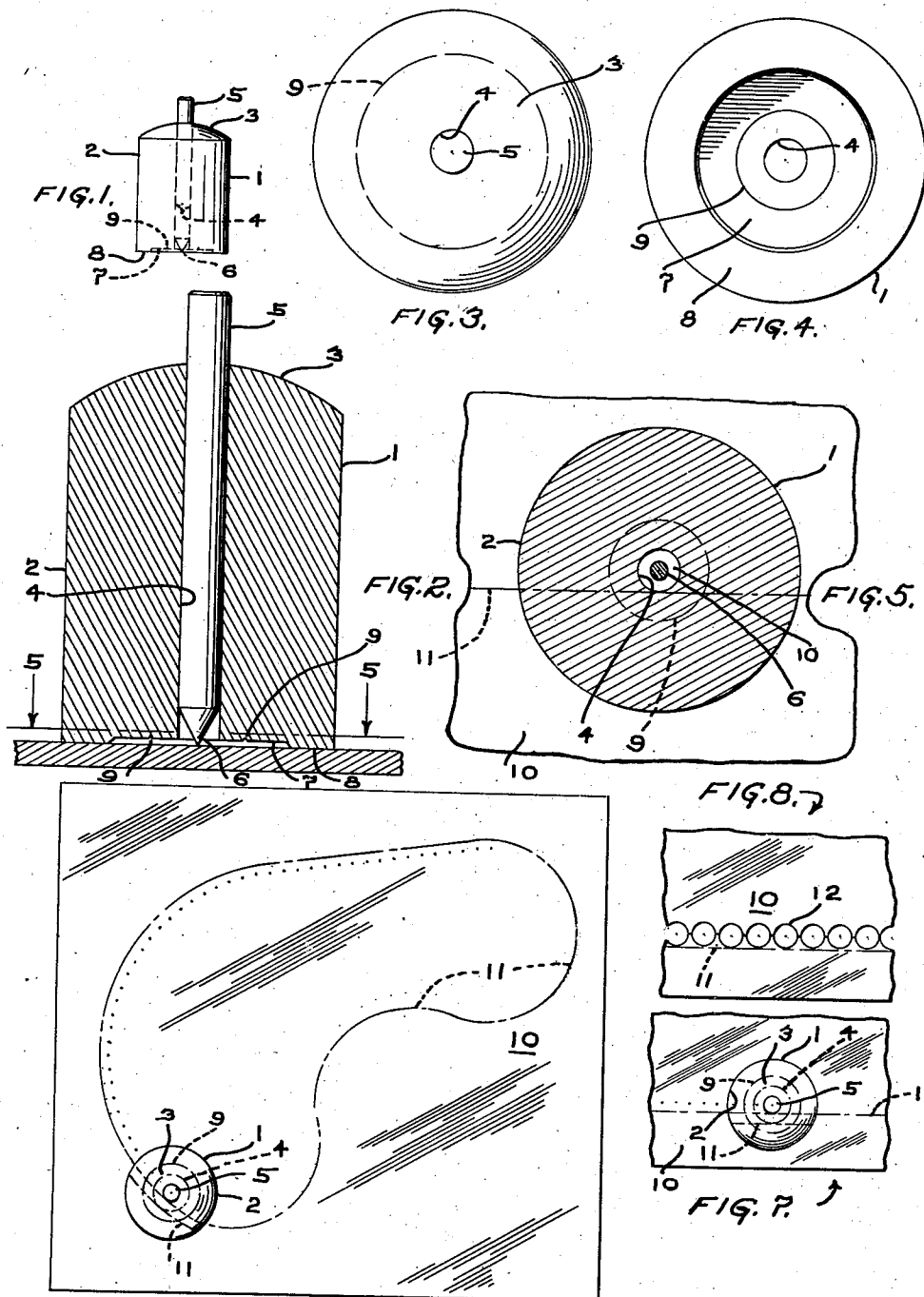


FIG. 6.

INVENTOR  
Remsen V. Wood  
BY Thomas W. Clark  
Attorney

## UNITED STATES PATENT OFFICE

2,426,480

## PUNCH ALIGNING LENS

Remsen V. Wood, Baltimore, Md.

Application January 12, 1946, Serial No. 640,947

11 Claims. (Cl. 33-189)

1

This invention relates to a punch aligning lens for use in making the initial punch marks on a sheet of metal which is to be drilled and cut to form irregular shapes.

In making templets or patterns for cutting irregular shapes or for making short runs of those shapes themselves, the common practice is to draw the desired shape with a scratch line on a sheet of metal. It is then the practice to drill holes quite close together to one side of this scratch line and then to break out the part along the holed line. It is desired to have the holes as close together as practicable and it is well known that the drill tends to run sidewise, into the adjacent hole, unless the plate is initially punched to guide the drill. An experienced workman can place the punch marks near to the scratch line and closely adjacent one another so that the drilling may be accurately done.

The lens of the instant invention enables the inexperienced and those with little mechanical ability to place the punch marks evenly close to the scratch line and to evenly space them with respect to one another as accurately as the experienced mechanic can do. The lens of the instant invention also enables the experienced mechanic to line up the punch holes much more quickly and accurately.

The lens is primarily a right cylinder with a spherical top, and with a hole through its axis which serves as a guide for a punch. A small circle or other index is inscribed on the bottom of the right cylinder, the magnified bottom of the hole also serves as an index. The lens is placed on the pattern so that the operator's eye is substantially in line with the punch and the magnified bottom hole index is placed in register with the scratch line on the pattern and then the punch is given a light tap with a hammer. The lens may then be moved around the pattern curve, placing the circle index on the preceding mark, and the hole index again lined up with the scratch line and another tap is given the punch. By this operation of successively aligning the index with the pattern curve, successive punch marks may be placed on the pattern the desired space apart and the desired distance from the scratch line. The spherical top of the lens magnifies the scratch line and the indices to make it easy to bring them into accurate register, and the lens itself holds the punch in exact vertical alignment with the plane of the pattern to always direct the punch exactly where the lens has located it.

Other objects and advantages of the inven-

2

tion will be apparent from the description and the accompanying drawing forming a part hereof and in which:

Figure 1 is a side elevation of the lens and punch.

Figure 2 is an enlarged vertical sectional view of the lens placed upon a pattern.

Figure 3 is a top plan view of the lens of Figure 2.

Figure 4 is an inverted plan view of the lens of Figure 2.

Figure 5 is a sectional view of the lens and punch of Figure 2 on line 5-5.

Figure 6 is a top plan view of a pattern showing the lens in operation.

Figure 7 is a fragmentary plan view similar to Figure 6.

Figure 8 is a fragmentary plan view of a pattern after drilling.

In the drawing similar numerals refer to similar parts throughout the several views.

The right cylinder lens 1 has a cylindrical body 2, and a spherical top 3 with a hole 4 drilled through its axis. Through this hole passes a punch member 5 with a hardened point 6. The punch 5 closely fits the hole 4 to accurately guide the punch. On the base the lens is cut out at 7 to form a downwardly projecting circular portion 8, which is at right angles to the axis of the lens and which forms a support for the lens on a pattern which is precisely at right angles to the axis of the lens. Within the circular portion of the lens at 7 is inscribed or cut a circle 9, the diameter of which is about twice that of hole 4. A sheet metal plate 10 has the outline 11 of the templet or pattern scratched thereon of the particular pattern shown. It is desired to cut out the form within the line 11, leaving the pattern to be the sheet metal plate 10, with the form cut out along the line 11.

In making the punch marks the operator will place the lens containing the punch on the sheet 10 and looking axially down upon it he will find the curve 11 through the top of the lens. He will then place the enlarged bottom of hole 4 tangentially to the curve or line and then he will take the hammer and strike the punch. He will then move the lens a distance along the curved line 11 and again place the bottom of the hole 4 tangentially to the line 11 and with the circle 9 over the prior punch mark and again hammer the punch to make an impression on the plate 10. He is guided in the distance of the punch marks apart by placing the preceding punch mark on the circle 9. This spacing of the punch marks

3

with respect to one another and from the line 11 is substantially that needed to space the drill holes apart the desired amount, and the desired amount from the line 11.

The spherical top of the lens greatly enlarges the bottom of hole 4, the circle 9 and the line 11, and also the preceding punch marks to make them easy to locate and thereby the lens enables an accurate spacing of the punch indentations with respect to one another and the scratch line 11.

In Figure 3 the circle 9 is shown enlarged as it appears through the top of the lens. The actual size of the same circle 9, on the enlarged scale of Figures 2, 4, and 5, is shown at 9. The lines formed by the step between the base support 8 and the underside of the lens 7 are so refracted by the lens as to be outside the line of vision of the operator looking vertically downwardly upon the lens. He does not see these lines forming the base. He only sees the enlarged bottom of hole 4 and circle or index 9. In Figures 6 and 7 the line 11, as it is viewed through the lens, is shown displaced outside the line 11, with the magnified bottom of hole 4 tangent to it.

After punching the holes in the plate with the punch of the invention, the sheet may then be drilled out, leaving holes 12 therein, accurately spaced apart and accurately spaced from the line 11 along the drill line. The inside portion of the sheet 10 may then be broken out.

Various materials and combinations of materials may obviously be used to make the lens of the invention, and various modifications may be made in the shape of the lens and the location of its magnifying spherical section and other changes may be made without departing from the invention.

What is claimed as new and is desired to be secured by Letters Patent is:

1. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, and a base on said lens to support the lens with its axis vertical to a plane.

2. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, a base on said lens to support the lens with its axis vertical to a plane, and an index of location on said lens, said index being magnified by said lens.

3. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, a base on said lens to support the lens with its axis vertical to a plane, and means on said lens whereby its location with re-

4

spect to indicia in said plane may be determined, said means being magnified by said lens.

4. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, a base on said lens to support the lens with its axis vertical to a plane, and an index of location on the base side of said lens.

5. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, a base on said lens to support the lens with its axis vertical to a plane, and a circular index of location on said lens, said index being magnified by said lens.

6. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, a base on said lens to support the lens with its axis vertical to a plane, and a circular index of location on said lens; concentric to the axis thereof, said index being magnified by said lens.

7. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, a base on said lens to support the lens with its axis vertical to a plane, and a circular index of location on the base side of said lens.

8. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, a base on said lens to support the lens with its axis vertical to a plane, and a circular index of location on the base side of said lens, concentric to the axis thereof.

9. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, a base on said lens to support the lens with its axis vertical to a plane, and means on the base side of said lens whereby its location with respect to indicia in said plane may be determined.

10. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, a base on said lens to support the lens with its axis vertical to a plane, and circular means on the base side of said lens whereby its location with respect to indicia in said plane may be determined.

11. An aligning lens having a punch hole through the axis thereof, a punch slidable in and guided by said hole, a base on said lens to support the lens with its axis vertical to a plane, and circular means on said lens concentric with the axis thereof and magnified by said lens whereby the location of the lens with respect to indicia in said plane may be determined.

REMSEN V. WOOD.