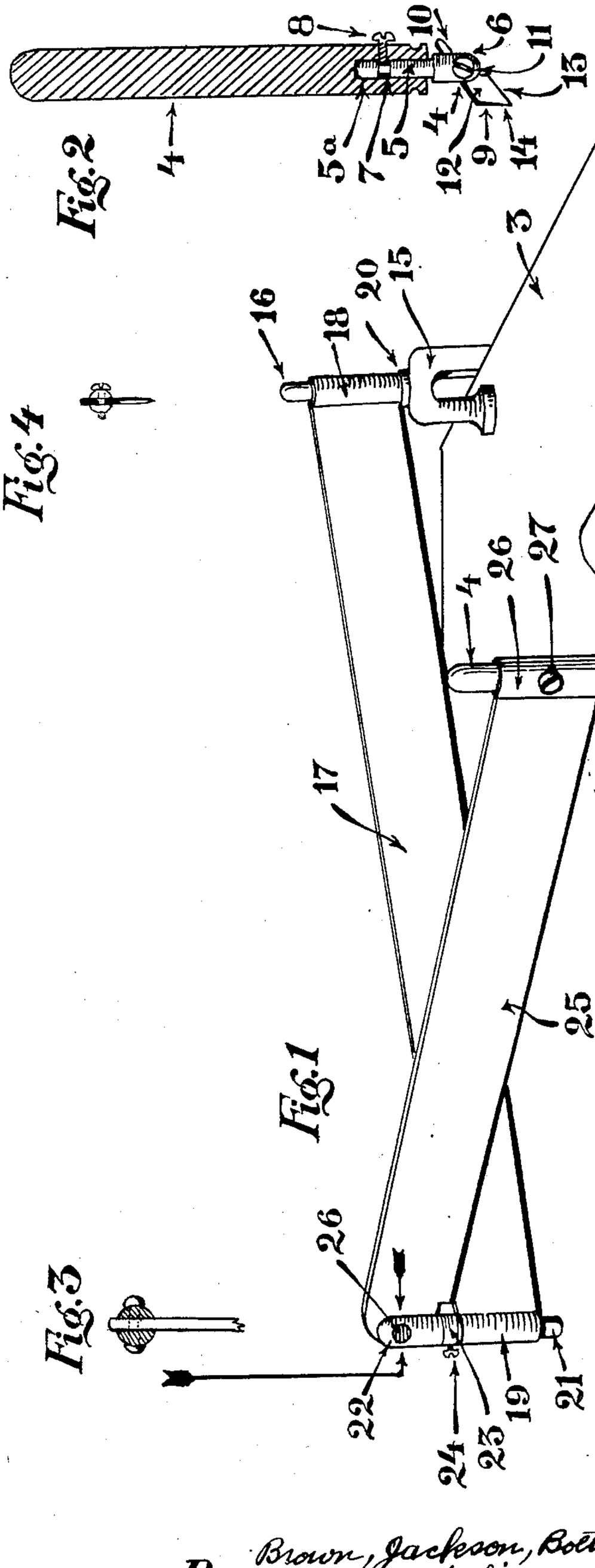
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CURVE CUTTER

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CURVE CUTTER

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This invention relates to cutting devices, and more particularly to a device for cutting curves of various sorts, particularly compound and irregular curves.

It is possible, by mounting a cutting blade for free turning movement and disposing it to engage the work at a point eccentric to the axis on which the blade turns, to cut curves of various characters. During the cutting operation, the blade, due to its eccentric mounting, trails the supporting member or handle in which such blade is mounted so that the blade may be moved with facility along a line defining a pattern which it is desired to cut. I have found, however, that it is important, to assure accuracy and ease in the cutting operation, to support the blade in such manner that it will be disposed perpendicular to the work at all times during the cutting operation.

By thus supporting the blade, it will readily turn or swivel so as to follow with ease the curves of intricate patterns and will cut the material or work much more readily than if the blade were not thus held.

One of the main objects of my invention is to provide a cutting device of the character stated of simple construction and operation in which the blade is held perpendicular to the work and is supported in such manner as to be readily movable thereover in all directions. A further object is to provide means whereby the blade can be readily adjusted so as to vary its angular relation to the work and can be renewed when desired at small cost. Further objects and advantages will appear from the detailed description.

In the drawing:

Fig. 1 is a perspective view illustrating the manner of using a cutting device constructed in accordance with my invention;

Fig. 2 is a sectional view through the handle, the blade and the holder therefor being shown in elevation;

Fig. 3 is a section taken substantially on line 3—3 of Fig. 1;

Fig. 4 is a section taken substantially on line 4—4 of Fig. 2.

I have illustrated my invention, in Fig. 1, as used for cutting various designs in a sheet 1 of paper or other material.

Preferably this sheet is supported upon a glass plate 2 which rests upon a table 3. The provision of the glass plate 2 is not essential but I prefer to utilize this plate as it prevents injury to the cutting edge of the blade such as would be apt to occur if the sheet 1 were supported upon wood or other material of like character into which the blade would enter after cutting through the sheet.

The cutting device comprises a hand piece or handle 4 bored out from its lower end for reception of a neck 5 which extends upwardly from a head 6, this head being slotted or bifurcated. The head and the neck constitute a holder for the cutting blade. The upper end of neck 5 is rounded as at 5^a and abuts the inner end of the bore which receives this neck, the inner end of this bore being preferably normal to the axis thereof, as illustrated. The neck 5 is provided with a circumferential groove 7 which receives the inner end of a retaining screw 8 threaded through handle 4. The blade holder is thus mounted in handle 4 in such manner as to have free turning movement on the axis of the handle.

A blade 9 is adjustably and removably secured in head 6 by means of a finger 10 inserted through the slot of this head, and a securing screw 11 threaded into the head transversely of the slot. The blade 9 includes the body 12 of rhomboidal shape, finger 10 projecting from the upper inner corner of this body.

The lower edge 13 of the body is the cutting edge and is inclined downwardly away from the holder, terminating in point 14. This point is disposed eccentric to the holder and is intended and adapted to penetrate the work and to provide a point of contact upon which the blade will readily turn or swivel to accommodate changes in direction thereof along the pattern being cut. The downward and outward inclination of the cutting edge 13 relative to the holder is of advantage as producing a draw cut so that relatively thick material can be cut with but little effort. By loosening the screw 11 the angular relation of the blade to the work can be varied so as

to increase or decrease the draw cut effect of the cutting edge 13 in accordance with the material being operated upon.

To assure ease and accuracy in cutting the material, the cutter, comprising the holder and the blade, should be held perpendicular to the work at all times so that the point 14 will serve as the point upon which the blade turns and the cutting edge 13 will be maintained in the proper angular relation to the work to assure greatest ease in cutting of the material. To effect this result, I have provided means whereby the blade and the holder, constituting the cutter, are held perpendicular to the work at all times and are supported in such manner as to be readily movable thereover in all directions.

A supporting and securing member in the form of a screw clamp 15 of known type is secured to the edge of table 3. I have found a screw clamp convenient as providing means whereby my device can be readily attached to a table of conventional construction, but it will be understood that any other suitable or convenient device for attaching the supporting means to a table or like structure can be employed. The member 15 is provided with a stud 16 projecting vertically from the top thereof. This stud is disposed perpendicular to the upper face of table 3 and, consequently, to the work 1.

An arm 17 is provided, at its ends, with sleeves 18 and 19 which are disposed parallel and extend transversely of the arm. The sleeve 18 fits snugly about stud 16 for free turning movement thereon and seats upon a collar 20 at the lower end of this stud. Sleeve 19 receives shank 21 depending from a yoke 22, which is transversely slotted from its upper end. A bearing collar 23 is secured upon shank 21 below yoke 22, by means of a set screw 24, and bears upon the upper end of sleeve 19. This collar provides means whereby the yoke 22 can be adjusted vertically if desired, and also provides a bearing for the shank during turning thereof in sleeve 19. A second arm 25 is pivotally secured, at 26, in yoke 22 and fits snugly in the slot of the yoke so as to avoid any undesirable looseness or play.

This second arm is provided, at its other end, with a sleeve 26 extending transversely thereof and disposed parallel to sleeves 18 and 19 of arm 17. This sleeve 26 receives the upper portion of handle 4 which is adjustably secured in this sleeve by a set screw 27.

The connection between the arms 17 and 25 is, in effect, a universal connection which permits movement of arm 25 about one axis parallel to stud 16 and about another axis at right angles to shank 21. Since the arm 17 has turning movement about stud 16, the supporting means is of such character as to permit movement of the cutter in all directions over the work and the combined length of the arms 17 and 25 is sufficient to permit cutting of any figure of any size such as would ordinarily be produced by a device of this character.

Preferably, I provide a sleeve 28 of rubber or other suitable material about the lower portion of handle 4 to facilitate firm holding of the tool during use thereof. This sleeve has been omitted in Fig. 2 for the sake of clearness. In using the device handle 4 is grasped as in Fig. 1, so as to be held firmly, and is then moved over the work in such manner as to cause the cutting edge of blade 9 to follow accurately the outline of the design or pattern being cut, as indicated. Due to the fact that the handle 4 is maintained perpendicular to the work at all times, ease and accuracy in tracing and cutting the pattern is obtained.

The blade itself can be readily produced at small cost and can be replaced as necessary or desired.

What I claim is:

1. In a device of the character described, a supporting member, an arm pivoted at one end to said member for movement about an axis fixed relative thereto, a connecting member pivoted to the other end of the arm on an axis fixed relative thereto, the axes of the pivotal connections at the ends of the arm being parallel, a second arm pivoted at one end to the connecting member on an axis perpendicular to the connection between said connecting member and the first arm, a handle carried by the second arm at the other end thereof and held thereby parallel to the axis of the connection between the first arm and the connecting member, and a cutter carried by the handle and free to turn about the axis thereof, said cutter being disposed eccentric to the handle.

2. In a device of the character described, an arm pivoted at one end, a second arm having universal connection with the other end of the first arm, said connection permitting relative movement of the second arm about two axes one of which is parallel to the axis of the pivotal mounting of the first arm and the other of which is at right angles thereto, a handle at the other end of the second arm and held thereby parallel to the axis of the pivotal mounting of the first arm, and a cutter carried by the handle and free to turn on the axis thereof, said cutter being disposed eccentric to the handle.

3. In a device of the character described, a clamp having an upwardly projecting stud, an arm having parallel sleeves at its ends, one of the sleeves receiving said stud and seating upon the clamp, a yoke having a shank mounted in the other sleeve, a second arm pivoted at one end in the yoke on an axis perpendicular to said shank, the second arm having at its other end a sleeve parallel to the shank of said yoke, a handle secured

in the sleeve of the second arm, and a cutting blade carried by the handle for free turning movement on the axis thereof and having a cutting edge comprising a point eccentric to the handle and adapted to penetrate the work.

4. In a device of the character described, a handle, a holder comprising a slotted head having a neck mounted in the handle for free turning movement, and a cutting blade having a reduced finger extending into the slot of the head and detachably secured therein, said blade being disposed to contact the work at a point eccentric to said neck.

5. In a device of the character described, a handle, a holder comprising a slotted head having a neck mounted in the handle for free turning movement, a cutting blade of substantially rhomboidal shape having a reduced finger extending from its upper corner into said slot and disposed substantially parallel to the cutting edge, said blade being so disposed that the point thereof diagonally opposite to said finger contacts the work, and means cooperating with the head for adjustably and releasably securing the finger therein.

6. In a device of the character described, a handle, a holder mounted in the handle for free turning movement, a blade of substantially rhomboidal shape, and means for adjustably securing the blade in the holder with its cutting edge inclined downwardly therefrom toward the work.

In witness whereof, I hereunto subscribe my name this 26th day of October, 1928.

VINCENT V. COLBY.